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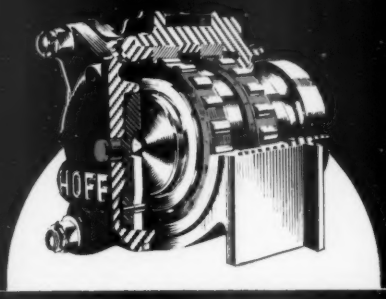


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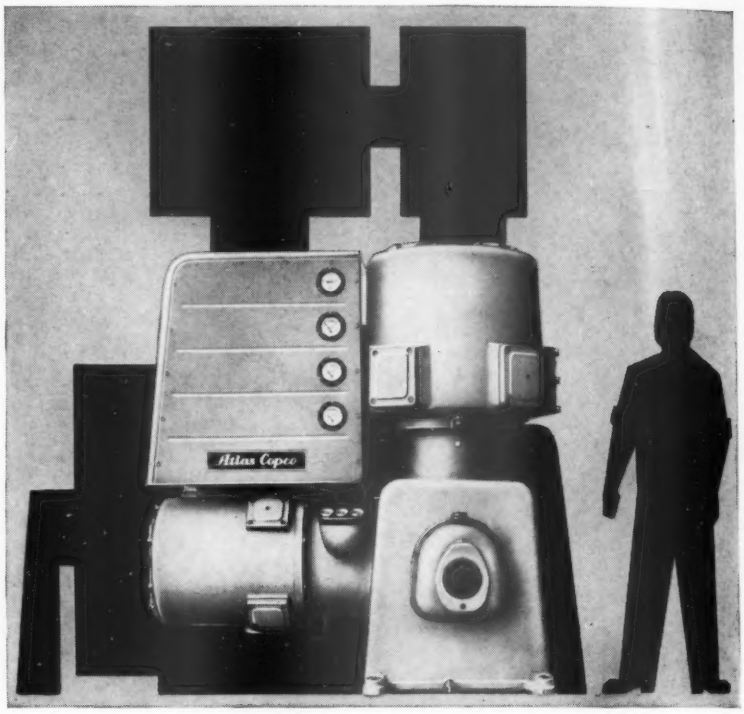


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Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal ESTABLISHED 1835 · THE RAILWAY RECORD.
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Annually £5 by post Single copies, Two shillings

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor : B. W. C. Cooke, Assoc. Inst. T.

Vol. 110] FRIDAY, FEBRUARY 27, 1959 [No. 9

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### Dispelling Misconceptions

BRITISH Railways freight services were attacked by Mr. W. A. Heymann, Managing Director of J. & H. Transport Services Limited, in a letter in *The Daily Telegraph* of February 17. He stated that the 10-hr. journey of the Condor container trains between the London and Glasgow railheads did not include collection and delivery and that the actual time taken by British Railways service from door to door would be at least 24 hr., and that the charge of £16 or £18 for a container with a maximum load of four tons would be highly uneconomical if a trader loaded only two or three tons in one container. A road transport firm such as his, he maintained, had to make a profit to make a living and also to replace its capital items such as heavy vehicles, "whereas apparently British Railways were in a position to receive a capital grant of £2,000 million from the Government." In addition, he alleged, British Railways were subsidised to the extent of £80 million a year "to cover up the loss that they make on freight and passenger traffic." In a reply published in last Saturday's *Daily Telegraph*, Lord Rusholme, Chairman of the London Midland Area Board and Member of the British Transport Commission, rightly pointed out that British Railways, like any other business, made a provision for depreciation. After a long period of capital starvation they were now receiving fresh capital by way of loans on which they were required to pay interest. There was no question of a capital grant. As regards the subsidy stated by Mr. Heymann to cover up losses, Lord Rusholme stressed that during the period in which services were being improved by modernisation, the Government was making loans to meet current losses, and that these loans themselves had to be repaid. Reference to the reports of the Commission will show that there has never been a loss of £80 million a year, or anything approaching that amount. The London Midland and the Scottish Regions of British Railways, which provide the Condor service, have made it clear that collection of containers is in the afternoon and delivery next morning, which affords throughout transits of much less than 24 hr. The capacity of containers, and rates, have been carefully studied, and it is unlikely that the weight limit allowed will result in uneconomical conveyance.

### The Late Sir George Beharrell

SIR GEORGE BEHARRELL, whose death, at the age of 85 is recorded elsewhere in this issue, began what was to be an outstanding career in transport, Government service and industry, on the North Eastern Railway in 1888. Trained under Sir George Gibb, General Manager, he quickly assimilated knowledge and experience the value of which was soon recognised by Sir Eric Geddes. His association with Sir Eric Geddes began in 1906 and was to continue for many years. In 1915 Sir George Beharrell became associated closely with his wartime activities. He continued to assist Sir Eric Geddes when the Ministry of Transport was formed, in 1919. When, in 1921, the Railways Act, providing for the grouping of the railways, was passed, the link between these two great men remained unbroken, and their services were transferred to the Dunlop Rubber Co. Ltd. Sir George Beharrell had a flair for statistics, a prodigious knowledge, particularly of transport affairs, and an insatiable capacity for work. His clear thinking and calm equilibrium in times of emergency, so noticeable in his Government service, were assets not only to the Dunlop Rubber Company, which he served so loyally for 35 years, but also to the rubber industry of which he became an acknowledged leader.

### North British Locomotive Co. Ltd.

SUBJECT to shareholders consent, the North British Locomotive Co. Ltd. has negotiated three new loans totalling £3,750,000. The new money is required because of the change over from steam to diesel locomotive manufacture, and because an important customer has discontinued progress payments. The Treasury will put up £1,750,000 at 5 per cent for 13 years; the Clydesdale & North of Scotland Bank will give overdraft facilities up to £1,500,000, and the General Electric Co. Ltd. will lend £500,000 at 5 per cent. The last named loan will carry the right of conversion into Ordinary shares. Preference shareholders are to be compensated for the additional prior charges by being given one new 5 per cent "A" Cumulative Preference share for every 10 Cumulative Preference shares already held. Last year's trading is expected to result in a very substantial loss, but the current year should show a considerable improvement. Uncompleted orders at present total some £14,000,000.

### Government Aid

THE decision of the Government to make available £1,750,000 to the North British Locomotive Company will cause satisfaction to those who have been concerned by the difficulties under which this old-established company has been suffering. It is a departure from normal Government practice so far as the locomotive industry is concerned, and it must raise questions as to Government policy in matters of this kind. The locomotive manufacturing industry, as a whole, is faced with a surplus of productive capacity, especially so far as the overseas

market is concerned. One of its greatest problems is, and has been, the ability of overseas competitors to offer longer-term credits. There is force in the argument that it is essential to promote the financial welfare of so old-established a unit as the North British Locomotive Co. Ltd. Equally, the continued well-being of manufacturers, who through their own efforts are profit earning, should be no less a matter of practical concern for the Government. That the Treasury has made available these funds may encourage the hope that it will assist, by other financial means, manufacturers of railway equipment for overseas.

## Diesel-Electric Locomotives for British Railways

THE order recently placed by the British Transport Commission for 226 main-line diesel-electric locomotives for British Railways, is the largest since the modernisation programme was announced in 1955. The total value is over £16,250,000. Details are given in our Contracts and Tenders columns. The locomotives will be of three power classes, and except for 42, will be of similar design to locomotives already in production. Deliveries will begin this year, and the locomotives will be progressively introduced in areas in which steam traction is to be entirely replaced by diesel power. The 137 locomotives to be built by British Railways at Crewe and Derby will have Crompton Parkinson transmission equipment and Sulzer diesel engines of 2,300 h.p., some of which will be uprated to 2,500 h.p. and classified Type "4." They will be used in hauling fast passenger and express freight trains in the London Midland Region. The remaining 89 locomotives are for general mixed traffic duties. Of these, 42 of 1,750 h.p. and 30 of 1,000 h.p. are to be built by the English Electric Co. Ltd. The other 17 of 800 h.p. are to be built by the British Thomson-Houston Co. Ltd. The 1,750-h.p. locomotives will be of entirely new design.

## Overseas Railway Traffics

PARAGUAY Central Railway receipts have maintained the improvement shown in the latter part of 1958. Aggregate receipts at December 5, 1958, showed an increase of G734,084 compared with the same period of 1957, and although returns have fluctuated from week to week, the increase at February 6, 1959, nine weeks later, was G892,087. During February last year receipts were boosted by record dispatches of sugar, so the continued improvement in this years receipts will depend largely on the state of the sugar harvest. Salvador Railway Company receipts for December, 1958, amounted to colones 379,000 compared with colones 382,000 in December, 1957. The aggregate receipts from July 1, 1958, amounted to colones 1,313,000 (colones 1,261,000). Railway operating revenues of the International Railways of Central America for December, 1958, amounted to $1,295,346, a decrease of $365,160 compared with December, 1957. Net income for the month was $14,828 ($183,128). Aggregate net revenue from railway operations for the year ended December 31, 1958, was $91,022 ($2,326,088). The approximate gross earnings of the Pakistan Railways for the 10-day period ending January 10, amounted to £1,320,000, and the aggregate earnings from April 1, 1958, amounted to £34,500,000.

## Government Operation of Bolivia Railway

THE taking over last week by the Government of Bolivia of the operation of the lines in Bolivia owned by the Antofagasta (Chili) & Bolivia Railway Co. Ltd., and of those which that company leases from the Bolivia Railway Company, was not unexpected. The British company had intimated its intention to suspend operations on February 18, as recorded last week. The authorities, presumably in deference to popular clamour, declined either to buy the railway at a reasonable price or to desist from intervention in matters which should be left to the management. The company could not be expected to operate a railway undertaking whilst it was forbidden to increase its charges to reasonable levels or to dispense with redundant staff. The Government is now to work the line for four to six months whilst a commission examines the financial and other problems. The latter include a drop in traffics caused by a fall in demand for mineral exports, higher labour and other costs, construction of oil fuel pipe lines, and growing road competition—a poor reward for what the Antofagasta Company has achieved in railway construction and operation in Bolivia for over half a century.

## Direct Link Between Sydney and Perth

CONVERSION to 4 ft. 8½ in. is again under active consideration of the South Australian Railways 3-ft. 6-in. gauge line between Port Pirie and Cockburn, on the New South Wales border. From Cockburn via Silverton to Broken Hill, terminus of a branch of the 4-ft. 8½-in. gauge New South Wales Government Railways, the link is the 36-mile line of the Silverton Tramway Co. Ltd. The gauge of the latter is also 3 ft. 6 in. If it too were converted to standard gauge, through running would be possible from Brisbane and Sydney to Adelaide and, via the Trans-Australian Railway, to Kalgoorlie, junction with the Western Australian Government Railways 3-ft. 6-in. gauge line to Perth, and there would be only the one trans-shipment point, at Kalgoorlie, between Perth and the two eastern capitals. In discussing gauge conversion with Mr. J. J. Cahill, Premier of New South Wales, Sir Thomas Playford, Premier of South Australia has suggested that the Silverton Tramway be not acquired by the two States concerned, but continue under private ownership. No doubt it would be converted to standard gauge, for which purpose financial help would be needed from the Commonwealth. The line is not a tramway, but a railway in every sense.

## Communications in Thailand

THE installation of a three channel carrier telephone and telegraph network by the State Railways of Siam (Thailand) is one of the many aspects of a plan to modernise the railway system. Before 1958, there was no substantial communication system. An open wire voice frequency system was used by the Railways, but this was inadequate for the distances covered; in many cases messages had to be relayed along the line orally. The carrier equipment, supplied by the Automatic Telephone & Electric Co. Ltd., will be used for administrative and operational purposes over the Northern, North Eastern, and Southern lines radiating from Bangsue, north of Bangkok. The North Eastern section is now in service, and the network, when completed, will provide 3,962 telephone circuit miles and 4,845 telegraph circuit miles. The type SUS/SUT equipment, operating on a frequency of 5 to 30kcs., uses two open-wire pairs of Copperweld. This is a steel core wire coated with copper, and combines high tensile strength with good conductivity. Telephone and telegraph switchboards are installed at Bangsue and Nakorn Ratsima. The communication system, costing some £100,000, was financed jointly by a World Bank loan and the International Co-operation Administration.

## Melbourne-Sydney Standard-Gauge Service

RAIL travel from Melbourne to Sydney via Albury, the present interchange between the Victorian Railways 5-ft. 3-in. gauge and New South Wales Government Railways 4-ft. 8½-in. gauge systems, will be accelerated by 2 hr. when the Victorian Railways standard-gauge line is completed in 1961. Expresses with air-conditioned steel stock will cover the 589 miles between the two capitals in 12½ hr. instead of the present 14½ hr. Details of the design of the new vehicles have not yet been completed, but 44 coaches, including sleeper cars, will be needed. This will suffice for four trains, two operating in each direction. The Victorian and New South Wales Governments are at present seeking a special loan from the Commonwealth to buy these vehicles. Tenders will be called, but railway workshops will be used as much as possible. The Commonwealth already has agreed to grant Victoria between £300,000 and £400,000 for conversion of 5-ft. 3-in. gauge rolling stock to 4-ft. 8½-in. gauge, but this money will

be used to buy new diesel locomotives for the standard gauge. The "Spirit of Progress," now operating between Melbourne and Albury, will be discontinued and its 11 air-conditioned coaches attached to several passenger trains on other Victorian country routes.

### Aitas Profile-Truing at Stratford

ONE of the Atlas standard wheel profile-truing machines ordered by British Railways has been installed at the Stratford Works of the Eastern Region in the diesel maintenance shop now being equipped. These machines, which are built by the North British Locomotive Co. Ltd. for the Atlas Engineering Co. Ltd., were described and illustrated in our October 10, 1958, issue. Some minor modifications have been made to the siting of and fittings to the machine, including light metal shields over cutter to prevent flying swarf, and an extension of the blower fan delivery pipe to carry swarf to a wagon outside of the building instead of into a container by the side of the pit. The latter also has been built rather larger than planned originally so that there is rear access to the panels of equipment. Although the installation has been in use for little more than a month and speed of operation is as being much less than will be possible with familiarity and practice, it has created a very favourable impression. It has been possible easily to treat a complete 6-axle unit in 4 hr. including the changing of cutting heads necessitated by two profiles.

### Growth of Traffic in Japan

THE growth of traffic over the Japanese National Railways in the 21 years, 1936-57, are shown in the current edition of the booklet of facts and figures which we have received from the President of the J.N.R., Mr. S. Sogo. In 1957, the latest year for which statistics are available, goods ton-km. at 48,216 million were a record, and compare with 16,297 million for 1936. Goods wagon-km. were 4,525 million (2,646 million in 1936). The average haul in 1957 was 271 miles and the number of goods vehicles of all types 112,595. These are striking results for a 3-ft. 6-in. gauge system. With the expansion of the national economy wagonload traffic has shown an upward trend, whereas smalls traffic, which was only 2 per cent of all goods traffic in 1957, has been losing traffic to road hauliers. The number of passengers has quadrupled since 1936. Traffic density on major lines is high, sometimes totalling 70-80 trains a day on single-track main lines. There has been much progress in developing a.c. electric traction, but the J.N.R. electrified route mileage is only some 1,300, out of a national total of 5,000, the highest in the world and accounted for by privately-owned urban and interurban railways.

### Alterations at Dover Marine

TO enable 12-car multiple-unit electric trains to be dealt with at Dover Marine, British Railways, Southern Region, the track layout has been altered to allow room for the platforms to be lengthened, and certain other work has been necessary, including a new footbridge connecting the station with the train ferry dock. The station has been closed all this week so that the most important part of the work can be completed. Cross-Channel passenger services, other than the motorcar ferries and the Dunkirk train ferry, have been diverted to Folkestone. Sailing and arrival times have been changed by a few minutes, but the boat trains on the Calais and Ostend services have left Victoria at the usual times. Complete closure of the station, rather than possession by the civil engineer for shorter periods, has been facilitated by the ability to deal with traffic at Folkestone Harbour during the slack season. A brief account of the engineering work at Dover is given elsewhere in this issue. The baggage vans attached to the Continental boat trains are shunted on to the quayside at Dover Marine. As it is impracticable to equip the quayside lines with third rail, battery-propelled vans are to be built for the electrically-hauled boat trains.

### Rehabilitating the Inland Waterways

RECOMMENDATIONS by the committee of inquiry, under the chairmanship of Mr. Leslie Bowes, into the nationalised inland waterways, published last year, are to be given a trial by the Government over the next two years before final decisions are taken. This is announced in a White Paper entitled "Government Proposals following the Report of the Committee of Inquiry into Inland Waterways" published this week. The White Paper praises the report, which, it is stated, "offers prospects of giving a fresh lease of useful life to much of the waterway system." To carry out most of the recommendations would require legislation. The Government, therefore, proposes to apply, as an experiment some of the ideas, so as to gain experience. Much of the White Paper is devoted to the recommendations by the Committee for the re-development of Class "C" waterways, those whose usefulness for transport is diminished, though still useful for drainage, or water supply. The Government recognises the need for new legislation, but in the meantime it is its wish that a start should be made immediately on re-development schemes during the trial period. The British Transport Commission as owners of most of the waterways would generally initiate schemes, and the Government urges all interests concerned to co-operate.

## The 40-Hour Week

AFTER nearly a month's meditation on the engineering unions' demand for a 40-hr. working week, the Industrial Disputes Tribunal has avoided giving a verdict. The unions sought an immediate reduction in the working week from 44 hr. to 42½, a further reduction to 41½ next year, and a final reduction to 40 in 1961. Because of its "far-reaching consequences" on other industries, the five members of the tribunal have concluded that it would not "be appropriate for them to make an award." The tribunal recalls that there has been a considerable number of claims for shorter working hours in other industries, and continues: "Where these claims have related to a reduction in working hours to 40 per week, as in the claim under consideration, no agreements have been reached on this basis; and arbitration awards, whether given through the Industrial Disputes Tribunal or through other machinery, have similarly not supported a claim made for such a reduction."

The first protest against the decision of the tribunal has been voiced by Mr. George Barratt, General Secretary of the Confederation of Shipbuilding & Engineering Unions. Mr. Barratt gave his opinion that the claim could and should have been considered on its merits. He referred to the statement by the tribunal that the employers have agreed in principle to shorter hours and would be prepared to make the change when circumstances allowed, but added that employers have professed this faith from time to time, yet have rejected the claim for a shorter working week three times during the past four years.

The avoidance by the tribunal of a verdict cannot be wholly satisfactory to either side, though each probably will try to make use of it in negotiation with the other. Looking squarely at the matter, it is difficult to blame the tribunal for its attitude, particularly as its tenure of office is ending this month. On the one hand, there is the public trend toward acceptance of the dogma that an ever-decreasing working week is its aim and right: on the other, there are the hard facts of economic life. These are particularly difficult to put over to employees: experience has shown the tribunal that unpalatable facts and awards often are first berated and then ignored by an appreciable proportion of the recipients.

The case for the shorter working week must be examined with careful attention to all underlying factors. The unions always have claimed it to be desirable as a means of providing more leisure time. Yet, in the majority of cases in which basic hours have been reduced, the total numbers of hours subsequently worked have not tended to vary beyond normal. Except in conditions of redundancy, it

is difficult to see how this could be otherwise. Assuming that the flow of work remains constant and the restrictive practices are continued, production is bound to fall unless the hours cut from the original working week are restored in the form of overtime. Thus, the result of the introduction of a shorter working week may not be an increase of leisure time, but an increase in wages.

It is true that, in those cases where there are conditions of redundancy, the shorter working week can effect a "spread" of employees, many of whom otherwise would become superfluous. The unions claim that control of recruitment would prevent the situation from getting out of hand and that much hardship could be avoided if work were distributed in this way. It is at least as certain that such a course would be exceedingly costly from the employer's point of view. In the case of the British Transport Commission, it is difficult to see how it could be done without incurring a snowball of deficit.

The tribunal has referred to the employers' declaration that they agree in principle to shorter hours and would be prepared to make the change when circumstances allow. These circumstances necessarily must include some contribution from the unions themselves. Because a shorter working week means either a decreasing flow of work or a constant flow of work and the payment of more wages—and both these conditions are indicative of a fall in production—factors must be introduced to allow employers to reimburse themselves for money lost from these causes. If the unions are sincere in their expressions of desire for more leisure for their members they must agree to the elimination of many restrictive practices, the steadily-increasing spread of automation and in some cases to an equally steady rise in the numbers of apprentices admitted to skilled trades. Only with this measure of co-operation will it be possible for employers as a whole to accede to union demands.

## Freight Liner Trains

THE overnight door-to-door container service on five days a week, and at inclusive flat rates, between extensive areas round London and round Glasgow is being introduced between the two districts in Britain most likely to yield traffic. This was done also in the case of passenger traffic, when the summer season "Starlight Special" trains at considerably reduced fares were introduced between London and Glasgow. As stated in our February 13 issue, the Condor container service of the London Midland and the Scottish Regions of British Railways will operate between terminals at Hendon and Gushetfaulds. These are well placed in the north-west and south respectively of the English and Scottish metropolitan areas, for dealing with traffic transferred from and to road collection and delivery vehicles. Besides the relatively low inclusive charges the afternoon collection and morning deliveries make it worth while to despatch to and from factories, warehouses and so on in places some way north and south of London and Glasgow respectively.

As each of the 27 flat wagons in the fixed formation of Condor sets conveys one 300 cu. ft. and 700 cu. ft. container, for which the flat rates are £16 and £18 respectively irrespective of the commodity, the maximum possible receipts for one trip are £918, which should be remunerative. The shuttling of rakes between terminals without marshalling will help to keep down operating costs. There is on the other hand the considerable cost element in the interest and depreciation on the two Co-Bo Type "2" diesel-electric locomotives hauling each train. How far it will be possible to fill the trains five nights a week remains to be seen. The rates have been calculated largely in relation to road haulage rates, which vary with the commodity. The Condor rates are lower than those usually quoted by road hauliers for some commodities, such as light machinery. They are, therefore, to some extent based on averages, loadability, and the probabilities of good traffics. Where they exceed the road rates, the quickness and, more particularly in winter weather, reliability of the Condor service should secure much traffic. It will be possible to revise charges in due course in the light of the amount of traffic passing.

There are probably several other routes for which similar services could prove successful, even although no pair of terminals promises such plentiful traffics as do Hendon and Gushetfaulds. Although terminal costs are not high, they must be taken into account. In this respect the distance between London and Glasgow, 400 miles, and probably the longest possible in Great Britain for this type of service, is a factor in favour of the "freight liner." The Condor service is likely to satisfy customers. If so, traffic by it will increase because of its reputation. That should pre-dispose many potential consignors in favour of services between other points. Traffic, public relations, and publicity staffs must show skill and judgment in assessing the probabilities of traffic and fixing rates for new container train facilities, and in creating demands for traffic by demonstrating and advertising success in providing a good service at attractive charges.

## Light-Unit Bridge Renewals

IN New Zealand where many timber road bridges are having to be replaced by more durable structures, a search was made for a suitable replacement. From the outset some form of prefabrication was considered essential, and various mild-steel spans with concrete decking were designed. The conclusion was reached that for facility of transport the superstructure must be moved in whole-span lengths, so that lighter material was necessary.

Aluminium-alloy was considered. Contrary to expectation, it was found that in many cases overall costs with this material were no higher than with others. Eventually it was decided that such one-piece spans should include the following features:—(1) Standard spans to be in multiples of 5 ft. up to 80 ft. maximum at any skew; (2) adaptability to any required width and live-load specification (3) one-piece single-lane width of 12 ft. between curbs; (4) lowest possible weight—not to exceed 7 tons for the longest span; (5) a deck capable of transmitting full live loads; and (6) construction able to be widely dispersed in many factories with ordinary fabrication facilities.

A design adopted by the Government consisted of closely-spaced multiple aluminium-alloy riveted trusses with a special load-bearing aluminium extrusion bolted to their top chords as decking and filled with a 4-in. bituminous plant mix. The range of spans is from 20 ft. to 80 ft., and the first one of 30 ft. has been in service for a year on a main road some 18 miles from Wellington, carrying 3,000 to 5,000 vehicles daily; it has a 24-ft. carriage-way; the complete superstructure weighed only 3·4 tons and was transported four miles by road and placed on the abutments in 1½ hr.

Preliminary deflection tests were conducted with: (*a*) a six-wheel grader with 3·3-, 3·65-, and 3·95-ton axleloads (*b*) a road-roller with a maximum axleload of 6·75 tons, and (*c*) an eight-wheel compactor with a maximum axleload of 11·95 tons and a total weight of 15·9 tons. These tests proved that under the design loading the stresses were satisfactory, but for other than secondary bridges some of the deflections were excessive and the bridge was too lively. Although the bitumen decking was suitable for secondary bridges, a rigid concrete deck was shown to be necessary to distribute the loading more evenly and to stiffen other bridges by composite action.

Such light portable spans could prove useful as overline bridges in multiple replacement of level crossings. The principles could be adapted also to local conditions, in replacement of underline bridges on some narrow-gauge railways. There must be many bridges on such lines, and possibly also on light-trafficked metre-gauge lines, where at present little or no margin is left for the increases in the weight of trains which may be expected on most of these lines in the next few years.

## New South Wales Government Railways

THE report for the year ended June 30, 1958, of the Department of Railways, New South Wales, a copy which we have received from Mr. N. McCusker, Commissioner of Railways, contains, as last year, informative graphs and good half-tone illustrations. A good deal of information is given on diesel and electric motive power developments and performances, in which the products of British builders played an important part.

The number of steam locomotives was reduced from 1,139 to 1,085. Only 59 per cent of the total mileage of all traction units was operated by steam, compared with 66 in 1956-57, whereas the diesel-electric locomotives ran 10 per cent, against 8 per cent, and the electric locomotives 4 per cent, against 1 per cent. At the end of the year diesel locomotives totalled 61, of which 2 were shunters, and electric locomotives 41. Even after allowing for introduction during the year of electric and diesel-electric locomotives, the use of these types of motive power was clearly intensive. The 10 British Thomson-Houston diesel-electric locomotives ran 154,232 miles, a decrease of 12·4 per cent, and handled 35,453,000 ton-miles, a decrease of 1·2 per cent. The electric locomotives, built in Britain by the Metropolitan-Vickers Electrical Co. Ltd., and placed in service at intervals during the year, numbered 41 at June 30, 1958. They ran 1,766,000 miles and handled 692,674,000 ton-miles.

Some of the principal results were as follow:

| — | 1956-57 | 1957-58 |
|---|---|---|
| Tota lmiles open | 6,103 | 6,103 |
| Total Earnings | £78,688,602 | £74,432,599 |
| Working expenses | £75,351,603 | £72,533,647 |
| Balance | £3,336,999 | £1,898,952 |
| Percentage of profit to capital invested | 1·3 | 0·7 |
| Percentage of working expenses to earnings | 95·76 | 97·45 |
| Earnings per train mile | 509·99d. | 510·09d. |
| Passenger journeys | 263,136,494 | 258,650,735 |
| Goods tonnage | 18,142,441 | 17,802,452 |

Traffic was affected by a decline in economic activity in the State, and by poor wheat and wool crops. Nevertheless a saving of £2,800,000 was achieved in working expenses. The administration ascribes this to budgetary control and to increased efficiency resulting from modernisation. As this was achieved in addition to the absorption of an uncontrollable increase in expenditure totalling over £1,000,000, economies in operation totalled some £4,000,000. Besides the special factors that reacted unfavourably on railway earnings, the Railways Department had to contend with the ever-increasing capital debt charges. These were due not only to interest and associated charges incurred on new capital expended, but very largely to the necessity to convert loans at a higher rate of interest.

Among the major works undertaken was erection of an electric and diesel-electric depot at Enfield. With a capacity for 60 electric and 100 diesel-electric locomotives, this was designed to provide for speedy and efficient inspection, servicing and maintenance. It includes a quantometer, for spectographic analysis of oils taken from crankcases of diesel locomotives. Work began on electrification between Hornsby and Gosford, described in our December 5, 1958, issue. Work associated with the quadrupling was carried to a stage further between Auburn and Granville. Further use of pre-stressed concrete beams and pre-cast concrete piles was made in construction of overline bridges.

Gradual mechanisation of operations of fettling, relaying, and bridge gangs, by the supply of power tools, continued. A new feature was the equipping and training of extra gangs for the mechanised relaying of track in single-line working conditions. Investigations continued, and are still proceeding with a view to increasing the speed of the N.S.W.G.R. rail flaw detector cars. Demonstrations of the rail flaw detector equipment on other Australian State systems resulted in orders being received for the manufacture of the equipment from four States, and an inquiry from the Thailand State Railways for the manufacture of a complete detector unit by the N.S.W.G.R. Progress was made with the fitting of non-metallic brake-shoes to electric rolling stock.

## The Success of Diesel Traction in the U.S.A.

*(By a correspondent)*

THE Association of American Railroads issued recently a report on the locomotive equipment of the Class 1 railways without comment, but it proves that the diesel has made good as the most economical and versatile motive power in the U.S.A. In 1958 the railroads scrapped 1,060 steam locomotives and began this year with a scanty fleet of 1,284, which included 571 cripples. They also had 559 electric units, 28 fewer than a year earlier, and 76, or nearly 14 per cent of the reduced stock, were under repair. The diesel saved the situation. In 1958 the railroads installed 430 new diesel units, bringing the stock at the end of the year to 27,744, with 1,389 units, or 5 per cent, unserviceable. Serviceable locomotive units of all types on January 1 numbered 27,551 and 26,355, or over 95 per cent, were diesels. Not a single steam or electric locomotive was then on order, but delivery of 535 more diesel units is expected this year.

In October, 1925, a hundred years after George Stephenson designed *Locomotive, No. 1* for the Stockton & Darlington Railway, the first diesel used regularly on an American line, started to shunt wagons at the Central Railroad of New Jersey freight yard in New York. The U.S.A. railroads then had a stock of 63,610 steam engines and 362 electric units, which worked 413,814 million revenue ton miles and 35,950 million passenger miles. The use of diesels increased slowly to 97 units in 1934, when the Burlington and Union Pacific put diesels on mainline passenger trains for the first time. Seven years passed before the Santa Fe and Southern railways used diesels on mainline freight trains. After 1941 the pressure of war traffic gave an impetus to diesel traction and by 1946 the railroads had 4,440 diesel units at work.

Meantime the A.A.R. had set up a committee to survey operating methods and procedures. Its report on the locomotive situation said that the diesel had the advantage of being a self-contained unit, which accelerated quickly, while its flexibility was enhanced by the system of separate power units. It could work, almost all day, almost every day, as it did not need time for routine chceks of fires, boilers and moving parts. The diesel consumed a small quantity of fuel for a large ouput of power and used little water, so that it made longer nonstop runs than a steam engine. Though the diesel might cost twice as much as a steam engine of equal power, it could make at least twice the monthly mileage. The railways could thus distribute capital costs and maintenance charges over enough mileage to avoid any extra cost per mile.

These findings encouraged the railroads to install 1,328 diesel units in 1947 and in the next six years an average of 2,819. The pace then slackened and in the four years 1954-57 the railroad purchased diesel units at the average rate of nearly 1,110; they did not put one steam locomotive into traffic and abandoned some electrified mileage. By the end of 1957 the total stock of locomotive units was 30,248 against 41,719 in 1947, a reduction of 27 per cent. A substantial saving in manpower and wages would ensue, as the annual payment to locomotive drivers and motormen varied from $7,800 to $10,000 according to the class of work performed.

In 1957, the railroads worked 60,215 million fewer ton miles than in 1947, a decrease of 8·6 per cent, but they cut freight locomotive mileage by a third in the 10 year interval and raised the net train load by 23 per cent to 1,439 tons. Freight train speed between terminals improved from 16 to 18·8 miles an hour and freight locomotive miles per day were 21 per cent higher at 146. Freight train hours, including shunting time at stations, were 38 per cent lower and the output of freight train operation grew by 47 per cent from 18,126 net ton miles

worked in a train hour to 26,815. Between the same years the speed of passenger trains rose from 37·5 miles an hour to 41·9, and passenger locomotive daily mileage increased by 54 per cent to 339.

Many of the 1957 statistics set up fresh records, in spite of a decrease in traffic volume, and represented efficient management of 222,000 miles of road in conditions differing widely in eight regions. It was odd to find in the leading article in *Diesel Railway Traction* for February the statement that "the American principle is to have standard locomotives for all duties, whether they are intrinsically suited to particular duties or not, any inefficiency in a traffic unit being hidden in the general railway inefficiency and the lack of knowledge as to what are the true criteria of traffic efficiency."

A reference to the admirable statistics circulated by the Bureau of Railway Economics from Washington, D.C., would have shown the author of this dictum that 25 of 105 Class 1 railroads have no passenger traffic and only 17 of the rest earned more than $10 million for carrying passengers in 11 months to November last. Few companies can keep a separate fleet for passenger work as the Pennsylvania does. In 1957 the Pennsylvania Railroad had a passenger revenue of $122 million, though it lost $57·5 million in earning it. In that year it used 100 passenger diesels with a tractive power of 125,140 pounds apiece, 216 freight locomotives with an average power of 184,915 pounds and 1,200 shunting diesels with an average power of 58,800. The Pennsylvania was slower than some railroads in trying diesel power, but, once it started, it went ahead until at the end of 1957 its motive power, outside the electrified area of 664 miles of road in the Eastern Region, consisted entirely of 2,359 diesel units. At that time the daily mileage of Pennsylvania freight locomotives was 64 per cent above the 1949 level, and the hourly output of freight train operation was 24 per cent higher. Perhaps that was the most striking achievement for the diesel on any railway, as over many years the Pennsylvania strove to improve the steam locomotive and also tried electric traction on a large scale. Significantly it always had great faith in statistics as a means of increasing traffic efficiency.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for opinions of Correspondents)*

## Passenger Traffic Recovery in the U.S.A.

February 16

SIR,—Your editorial note of February 13 drew attention to various attempts some U.S.A. railways are making to check the decline in passenger traffic. These efforts may increase local bookings, but their scope is too limited to affect the volume of passenger business as a whole. Though many passenger fares were increased in January, 1958, passenger revenue for 11 months to November last was $608 million compared with $670 million in 1937, a decrease of over 9 per cent.

All the companies mentioned in the editorial earned less, the rate of decrease varying from 3 per cent on the Burlington to 13 per cent on the Northern Pacific and 20 per cent on the Baltimore & Ohio, which recently abandoned some services run at a loss and saved on working expenses. In present conditions, the more passenger trains a railway runs, the more money it loses as a rule. Further withdrawals of services seem likely in future rather than recovery.

Yours faithfully,

R. BELL

Clacton-on-Sea

## Gauge Conversion to Relieve Indian Main Line

February 12

SIR,—I was most interested in the article in your January 2 issue. Long before the metre-gauge route from Barauni to Lucknow was envisaged and constructed there was a proposal to build a broad-gauge main line to serve the North Western Province from a point on the Ganges opposite Buxar, forming a junction with the East Indian Railway.

Proposals were first put forward in September, 1863, by Mr. J. E. Wilson, of the Indian Branch Railway Company, later the Oudh & Rohilkhand, for powers to construct a system of railways in Oudh and Rohilkhand. This included a main line from the Ganges opposite Buxar passing through Azamgarh and Akbarpur, to join the Delhi & Lahore Railway near Saharanpur with a branch from Jaunpur to Benares.

Contemporary official views did not all favour the proposals. Sir C. E. Trevelyan, while regarding it as "a profitable undertaking without Government assistance" observed that it would compete with the E.I.R. and that any assistance given to the Buxar line would diminish the rate at which the State advances to the E.I.R. would be repaid. The Home Board of the E.I.R. Company advanced the same views. The Government of India expressed the view that the line would be a useful feeder, and supply an inlet for much upward traffic from Calcutta beyond the reach of the E.I.R., which would benefit.

Eventually a contract was signed in August, 1867, and the Government agreed to co-operate in construction of a railway from Buxar, but the Indian Branch Railway Company failed to receive the necessary support from the Government, due largely to the influence exerted by the E.I.R. The line from Lucknow to Benares Cantonment was completed in May, 1874, but no decision was forthcoming on the main line to Buxar. At length, in 1880, the company was relieved from its obligations, under the original contract, to build a line from Buxar to Akbarpur. Under a supplemental contract of 1883, it was agreed that in lieu it should build a bridge over the Ganges at Benares, and form a junction with the E.I.R. at Moghalsarai. In view of the subsequent history of the two railways the decision not to proceed with the Buxar line was most unfortunate. The bridge over the Ganges was opened in December, 1887, completing the plan of the Oudh & Rohilkhand Railway under the contract of 20 years earlier.

Yours faithfully,

R. S. OAKLEY
(Late Indian State Railways)

2, Wales Avenue, Carshalton, Surrey

## The First Excursion Train

February 18

SIR,—I must take issue with my friend Mr. D. Inkpen who in his letter in your January 30 issue states: "If the railway companies in the North and Midlands had developed their own cheap excursions on similar lines, we might never have heard of Thomas Cook!"

Men with the imagination, initiative, foresight, and business courage of Thomas Cook can never be kept down. This applies even more to men of the calibre of his son, John Mason Cook, who further developed and consolidated the work his father had commenced. This included Cook's outstanding contribution to the economy of Egypt. Thomas Cook used cheap excursions as the hook on which to hang his hat. No action by the railway companies in the North and Midlands would have kept Thomas Cook unheard of forever. We shall go on hearing of Thomas Cook and (his) Son till time shall be no more.

Yours faithfully,

A. J. TURNER

The Haven, 19, Clifton Road, Coulsdon, Surrey

# THE SCRAP HEAP

### Out of Training?

Honiton, Devon, football club were to have played British Railways at home recently, but the match was cancelled. The visitors could not arrange transport.—*From the "News Chronicle."*

### Train Post Office Anniversary

A special pictorial date stamp is to be used to mark the 50th anniversary of the New Zealand North Island main trunk railway travelling post office. The date stamp will carry the wording "R.T.P.O. Main Trunk—50 Years," and will have across its centre a reproduction of a mail van of the express trains. Only letters previously forwarded to chief postmasters will be cancelled with the special stamp. These letters will be carried on the train marking the 50th anniversary.

### The First Passenger Locomotive

The first passenger train locomotive was *Invicta*, belonging to the Canterbury & Whitstable Railway. This locomotive maintained a regular service over a portion of the Canterbury & Whitstable railway from May 4, 1830. Mr. Malpass claims 1825 for *Locomotion* No. 1, but he fails to mention that it made only one run with passengers on the opening day. It even returned "light" to its depot on that day. It was not until 1833 that the Stockton & Darlington Railway introduced a regular passenger service hauled by steam locomotion, and we have it on record that *Locomotion* No. 1 blew up in 1828 (!) and it is the re-built locomotive that stands today at Darlington Station. Similarly, *The Rocket* was not employed as a regular hauler of passenger traffic until well after the opening of the Canterbury & Whitstable line in May, 1830. —*Lt.-Colonel T. M. Simmons, Assistant Keeper, Department of Transport & Mining, The Science Museum, in "TV Times."*

### Left Hand, Right Hand

Referring to the arms of the former Great Northern Railway of Ireland, illustrated in the Scrap Heap of December 19, 1958, a correspondent states that we were wrong in describing the red left hand as that of Ulster. It is, he maintains, a baronial symbol, whereas the Red Hand of Ulster, which is shown on the crest of the Ulster Transport Authority, is a right hand.

### Damages for Discomfort

Railway companies are much interested in the case decided in the Colne (Lancashire) County Court in which the judge awarded 5s. damages to a first-class passenger against a company for filling a compartment in which he was travelling with third-class passengers.—*From "The Evening News," February*, 1909.

[In giving judgement, Judge Graham was quoted in *The Railway Gazette* of February 12, 1909, as saying that he did not think a railway company fulfilled its contract to provide first class accommodation merely by placing a compartment labelled "first class" at the disposal of the traveller. He found, therefore, that there had been a breach of contract, and gave judgement for plaintiff with 5s. damages and costs.]

### Cynicism?

On February 10, the British Transport Commission successfully put its case to the East Anglian Transport Users Consultative Committee for closing Ampthill's main-line station. On the same day, an advertisement appeared in the local paper, the *Ampthill News*, advertising cheap tickets from Ampthill Station.—*"Peterborough" in "The Daily Telegraph."*

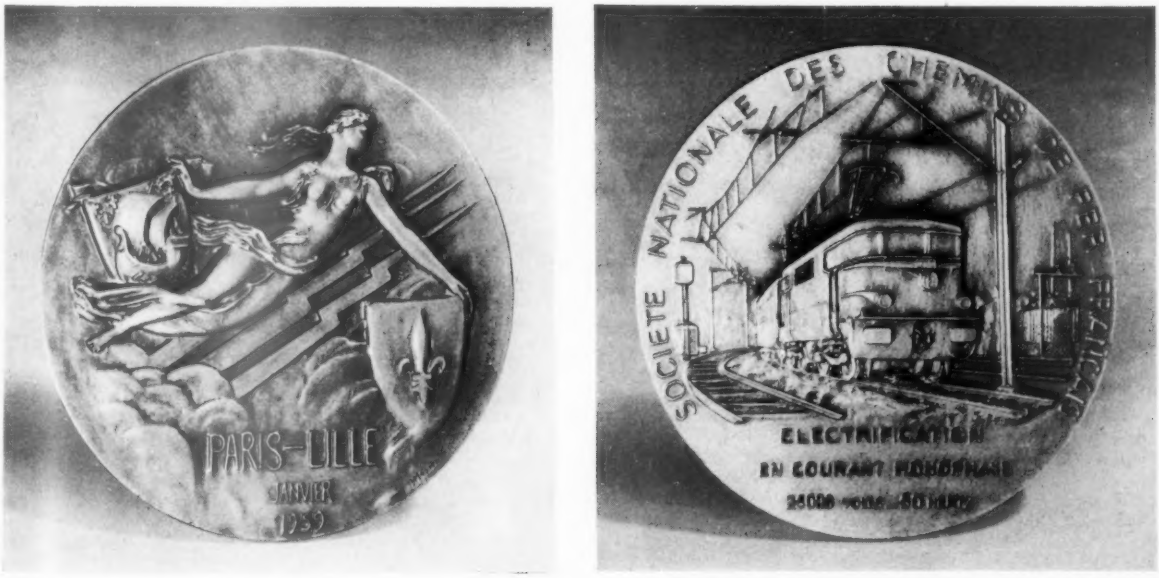
### One Man's Meat . . .

You can talk till you're blue in the face
Of improvements all over the place
And tell the glad story
Of ultimate glory
And blessings in store for the race.
But until someone makes railways pay,
Which may happen sometime, so they say,
You won't be far off it
If you care to profit
By Coué's advice, day by day.

When modernisation is through
And everything's sparkling and new,
There'll be some hiatus
In rhymesters' afflatus,
As joking points vanish from view.
Take diesels, so often in mind:
Points of humour aren't easy to find;
This much-vaunted puffer,
Though flaunting a buffer,
Hasn't even a tender behind.

A. B.

## Inauguration of Electrification between Paris and Lille




*Medal commemorating inauguration on January 11 of electric traction on the Northern Region of the French National Railways between Paris and Lille (see our January 16 issue)*

# OVERSEAS RAILWAY AFFAIRS

*(From our correspondents)*

## INDIA

### Spare Boilers from Chittaranjan

With the attainment recently in the manufacture of boilers for the "WG" class locomotives which it has been turning out, Chittaranjan Locomotive Works has now entered a second phase in the manufacture of spare boilers for other classes.

## PAKISTAN

### Wagon Production

The Pakistan Railway Workshop at Moghulpura near Lahore has reached an output of 1,000 wagons a year. The Central Government has drawn a similar programme of development for Railway Workshops at Saidpur and Pahartali in Eastern Pakistan. The workshops are being remodelled, and a diesel workshop is to be built at Pahartali. The scheme is estimated to cost £2,250,000.

## NEW ZEALAND

### Closure of Branch Lines

The closing of six branch lines in an effort to cut Railways Department £3,000,000 a year operating loss, is being considered by Mr. M. Moohan, the New Zealand Minister of Railways. Mr. Moohan has stated that during the last financial year the six lines, totalling 132 miles, cost the taxpayers £84,000. During the last five years the losses had totalled about £400,000. It is estimated that to put the lines in proper running order would cost about £665,000 over the next few years. Among the lines concerned is one of 13 miles, on which a loss of some £9,860 was incurred in the last financial year.

## UNITED STATES

### Chicago - West Coast Freight

A number of American railways are now making determined efforts to recover long-distance freight traffic from road hauliers. Recently the times of the fastest freight trains between Chicago and cities on the Pacific coast, from 2,226 to 2,301 miles distant, have been cut to 60 hr., only 50 per cent more than the times of the principal streamlined passenger trains. There is a similar acceleration from and to St. Louis.

In January last freight loaded on the evening of the first day was guaranteed delivery on the Pacific coast on the morning of the sixth day; by February this time had been cut by a day; and now truckload freight can be delivered by the afternoon of the fourth day, that is, three days after being loaded.

The Chicago & North Western and Chicago, Milwaukee, St. Paul and Pacific companies are booking fast freight trains out of Chicago at 6 p.m., and are working them to Council Bluffs (Omaha) in 10 hr. for a distance of 484 miles. From Omaha the Union Pacific takes over, and with the Southern Pacific guarantees delivery in the Los Angeles and San Francisco areas by the afternoon three days later.

The Santa Fe, Rock Island-Southern Pacific, and Burlington-Rio Grande-Western Pacific railways are also accelerating similarly. New motive power is on order for working the fast freights; the Santa Fe is buying 42 and the Burlington 16 diesel-electric units of 2,400 h.p. each. The Milwaukee is using four-unit diesel assemblies of its existing stock, hauling trains of 75 to 100 bogie wagons at an overall average exceeding 48 m.p.h.

## CANADA

### Heated Wagons

Tests were recently carried out in Montreal with heated covered wagons. Two wagons loaded with potatoes were allowed to remain in the open for a week before unloading. Temperatures well below zero were encountered, but the temperature inside the wagons remained controlled at 40° above zero.

The cars are designed to carry all

## New Construction to Serve Indian Steelworks

*Linking up on the branch of the Eastern Railway built to serve the new Durgapur steelworks*

perishable traffic, such as vegetables, at present handled by refrigerator vans. In addition to having a greater capacity than the refrigerator vans, 52 tons of potatoes compared with 22½ tons, the new heated covered wagons are much cheaper to produce.

One of the vehicles tested was heated by charcoal heaters under the floor which pipe fluid heat throughout the wagon ensuring uniform temperatures and eliminating cold spots. The other had a heater burning alcohol. Earlier tests in northern Manitoba had shown that the vehicles keep a controlled temperature in winter as low as 40° below zero.

During the shipment the potatoes were also tested for bruising in heavy loads. The wagons were filled to varying heights and some of the potatoes were protected with added insulation. It was discovered that no bruising would occur in capacity loads even without the extra insulation.

## ARGENTINA

### General Belgrano Railway Accident

On January 25, the international express "El Panamericano" of the General Belgrano Railway from La Paz, Bolivia to Buenos Aires, was diverted to a running loop to cross a goods train. The latter collided with the last coach of the express as it was entering the loop, severely damaging a Pullman and a sleeping car. No lives were lost, but 16 passengers were injured.

### Railway Operating Deficit

Apart from measures being taken by the Transport Secretariat and the State Railways to alleviate the situation of the railways, it has been decided to set up a joint committee of the Senate and Chamber of Deputies to study the matter and recommend ways and means of eliminating the deficit. The President of this committee has informed Dr. Guido, Provisional President of the Republic during the absence in U.S.A. of Dr. Frondizi, that by June next it will have completed the first stage of its plan, which will include the presentation to Congress of a new railway law and propose the necessary steps for dealing with the deficit of 14,000 million pesos and the financing of the re-equipment programme, which needs 5,000 million pesos in 1959.

## IRELAND

### C.I.E. Rate Reduction

The new package deal under which Coras Iompair Eireann is offering improved and cheaper goods transportation for Irish business firms is understood to be resulting in some increased traffic for the railways. Although no contracts have been signed yet, motorcar dealers in Dublin have been offered a considerable reduction in the cost of transportation of tractors. Many firms have taken advantage of this reduction to have tractors carried by C.I.E. from the Ford Motor Company in Cork to their Dublin garages.

## HUNGARY

### Diesel Locomotive Repair Shops

One of the oldest railway repair shops in the country, the Budapest North Works, is being extended before being made over from steam to diesel locomotive repair work. This was announced recently by Mr. Imre Kalló, Deputy General Manager of the State Railways.

Work on the foundations of the new workshops and office buildings at the Budapest North Works began last autumn on a 5½-acre site. Completion is scheduled for December 31, 1961, though the new works is expected to operate at half-capacity by the beginning of that year.

The existing steam locomotive shops are being reconstructed to fit them for handling diesel repairs. By 1964 all steam locomotive work will have been transferred to other shops.

The new shops are to be equipped to deal with the 2,000-h.p. diesel-electric locomotives to be placed in service shortly.

Engines coming in for repair will be washed automatically. A completely enclosed "hydromatic" washing plant is being installed which will clean off oil and dirt from the engine.

The new diesel shops are to have a special heating system which will maintain a curtain of warm air across the entrance when the shed doors are open.

Apprentices to be included eventually in the works staff are being trained at the Ganz Factory, and training courses are being planned for older workers who have worked on steam locomotives all their lives.

## FINLAND

### Diesel Traction

The State Railways intend to order some 50 diesel locomotives, partly from Finnish industry, and partly from abroad. Tenders by foreign firms have been under consideration since 1957. Tests are being conducted with two heavy locomotives on loan from the Swedish State and German Federal Railways, both altered to run on the Finnish 5-ft. gauge. The Lokomo O.Y. Works at Tampere, and the Valmet O.Y. Works at Helsinki and Tampere are jointly producing an experimental diesel locomotive to be delivered shortly. This will be powered by a M.A.N. engine with Brown Boveri transmission. Bogies will be of the S.L.M. type.

## Publications Received

*Compressors and Vacuum Pumps and Their Lubrication.*—A 225-page book, published by the Shell Petroleum Co. Ltd., London, is primarily concerned with air compressors, although some information deals with gases other than air. The book describes most classes of compressor and vacuum pump, with notes on lubrication mainly addressed to the operator. Advice on the application of lubricants is given in general terms so as not to override specific recommendations issued by manufacturers. A single colour is used to show oil passages and wearing surfaces in illustrations and sectional drawings of typical examples from the ranges of equipment by well-known firms. The comprehensive description of the principles and essential design features should be valuable to readers whose interests lie outside the compressor industry. One chapter deals with four main classes of air inlet filter and with the purification of compressed air. A viscosity conversion table is appended. Copies of the book are available in the United Kingdom from Shell-Mex and B.P. Limited, Shell-Mex House, Strand, London, W.C.2, and in other countries from the local Shell Company.

*Processes for Timber.*—A bulletin issued by the Electric Tamper Export Company, of 205, West Wacker Drive, Chicago, 6, and available free on request, describes techniques and equipment for preservation treatment, including impregnation under pressure, of timber sleepers, poles, posts, and pilings for under-water structures. The various processes for empty-cell and full-cell timber preservation are dealt with in detail. A description is given of steam-conditioning for rapid seasoning. Details are given of some of the treatment plant supplied by the company, for use either separately or in conjunction with sleeper adzing and boring rules briefly described on page 604 of our November 14, 1958, issue. The selection of wood for sleepers is the subject of notes.

*Bonding Paint to Metal.*—An illustrated booklet, "Bonderising," describes this method of obtaining a good key-surface for organic finishes and arresting the spread of corrosion from damaged areas of paint film. It explains the principle of converting the metal surface into a non-metallic phosphate coating of Bonderite and gives the sequence of operations for processing steel, zinc, and aluminium. Brief details are given of recommended methods for treating various articles using immersion, spray gun, brush or for large production runs, fully automatic Spra-Bonderising plant. Tables show the operating times, temperatures, and applications for 10 typical Bonderising metal-protective processes. The booklet is available from the Pyrene Co. Ltd., Metal Finishing Division, Great West Road, Brentford, Middlesex.

# Bogie Designs for Russian Diesel Locomotives

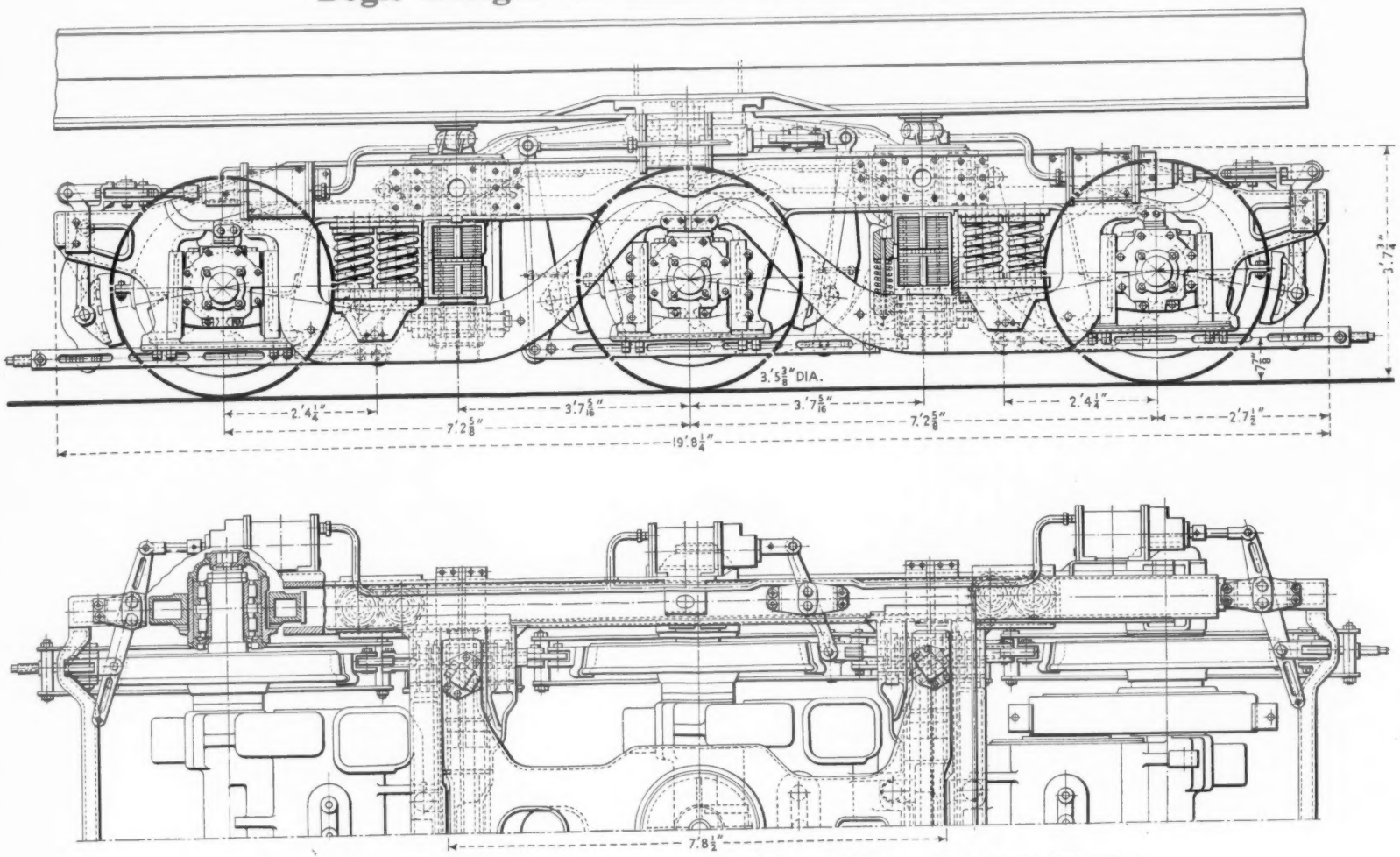



*Fig. 1—Six-wheel bogie of conventional design for gas-turbine and 3,000-h.p. diesel-electric locomotives*

# Bogie Designs for Russian Diesel Locomotives

*Experiments to improve riding qualities*

OPERATING experience and extensive road testing with the "TE.3" Co-Co diesel-electric locomotives[1] of the U.S.S.R. Railways have shown that their running qualities are not well suited for speeds of up to 100 m.p.h.[2] The suspension is limited to primary springs only. Heavy half-elliptic springs are used between the axleboxes and frame. The springs are equalised, the ends of the assembly supporting the outer ends of the bogie frame via helical springs. The total deflection is limited to $2\frac{3}{8}$ in. The body rests on the bogie by means of four roller assemblies moving on inclined surfaces. This provides a bogie returning torque when on curves[3]. The centre pin is used to transmit forces in the horizontal plane only. The complete bogie weighs 25·6 *tonnes*.

Tests conducted on 15-ch. and 30-ch. radius curves have shown that by reducing the angle of incline of the centring surfaces from 3 deg. 30 min. to 2 deg. and increasing the lateral axlebox play of the first, second, and third bogie axle from ±1·5, ±5 and ±1·5 mm. to ±3, ±7 and ±3 mm., respectively, reduced the maximum lateral force imposed on the bogie frame from 4·5 to 3·2 *tonnes*. Further improvement was obtained using an angle of 2 deg. combined with increasing the lateral play to ±5, ±10 and ±5 mm. respectively, and the use of rubber pads between axleboxes of the end axles and the frame, so reducing the lateral loads down to 1·95 *tonnes*.

### Sliding Supports

The use of rubber pads and the above play, with sliding supports, improves the riding qualities in the horizontal plane in the straight. The maximum lateral load in curves are of the order of 2·5 *tonnes*. The use of sliding supports was found to be of particular benefit in the straight by reducing the magnitudes of lateral accelerations from 0·22 to 0·25 g. with roller supports to about 0·16 g. As the result of these investigations it was concluded that a modified version of the "TE.3" bogie could be used with new 3,000-h.p. single cab locomotives, provided the speeds are limited to 60-75 m.p.h.

In 1956 a modified version of the "TE.3" locomotive designated as type "TE.7" was built for speeds of up to 88 m.p.h., the main modifications affecting the brake gear and the motor gear ratio.

During 1957 the first "TE.7" locomotive was tested in conjunction with a Class "ChS1" locomotive built in Czechoslovakia. The latter is an 84-*tonne* Bo-Bo electric locomotive incorporating fully-sprung motors with Sécheron type flexible drive and bogies to the S.L.M. design. The overall length of the locomotive is 56 ft., the distance between the bogie centres is 27 ft. $2\frac{1}{2}$ in. and the bogie wheelbase 11 ft. The wheels are 4 ft. $1\frac{1}{4}$ in. in diam. and the one-hr. output of the locomotive is 3,200 h.p. The roller surfaces of the "TE.7" locomotive were inclined at 2 deg., whilst the lateral play of the axleboxes was ±4, ±7 to 8 and ±4 mm. respectively. The results of the tests are summarised in the table below:—

| | Straight 87–94 m.p.h. | | 50-ch. curve 87–94 m.p.h. | | 31-ch. curve 62·5 m.p.h. | |
|---|---|---|---|---|---|---|
| | TE.7 | ChS1 | TE.7 | ChS1 | TE.7 | ChS1 |
| Rail stress (*tonnes* per sq. in.) | 12·3 | 9 | 14 | 14·3 | 11 | 11 |
| Lateral load between rail and sleeper (*tonnes*) | 2·13 | 0·81 | 2·66 | 2·66 | 3·2 | 3·4 |
| Lateral rail displacement (mm.) | 6·1 | 1·7 | 4·1 | 3·6 | 3·6 | 2·7 |

The lateral forces between the bogie frame and the leading axles are some 3 and 2 *tonnes* for the first and fourth axle respectively. However, at speeds above about 75 m.p.h. the riding qualities of the "TE.7" locomotives in the lateral plane became very erratic. The body was thrown from side to side and intense lateral blows were experienced in the rear cab. The lateral loads imposed on all axles of the rear bogie at speeds of 87-94 m.p.h. reached magnitudes of 8-9 *tonnes*, which could not be regarded as acceptable.

In an attempt to improve the riding characteristics, the laminated springs were replaced by helical units installed in conjunction with rubber pads and the body supporting roller assemblies were replaced by flat pads, whilst rubber pads were also introduced between axles and axleboxes. These modifications improved the riding in the lateral plane, the forces being reduced some $2\frac{1}{2}$ times. Despite this the riding qualities could not be regarded as satisfactory for speeds above about 60 m.p.h., mainly because of large unsprung weights and the stiff suspension. It is considered that in the long run satisfactory performance can be achieved only by introducing a certain measure of elasticity between bogie and body, *i.e.*, by making use of a secondary suspension system, thus conforming with the ideas of other progressive workers in this field.

### Experimental Six-Wheel Bogies

Arising out of the above considerations the Ministry of Transport approved the development by the Kolomna Works of two types of experimental six-wheel bogies. The first of these (Fig. 1) is designed along conventional lines and is intended for use with gas turbine locomotives and 3,000-h.p. single-cab diesel locomotives weighing 135 to 138 *tonnes*, each bogie weighing

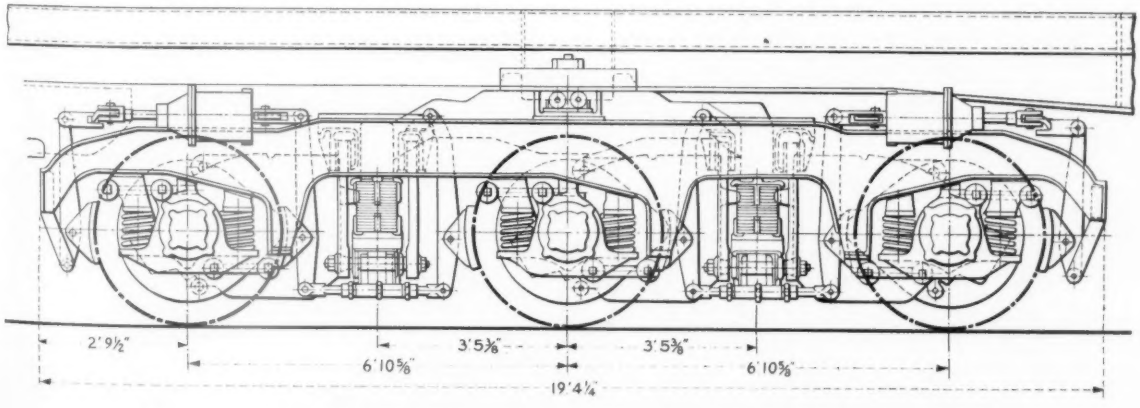



*Fig. 2—Six-wheel bogie with Alsthom type of axlebox suspension and conventional bolster arrangement for diesel locomotives*

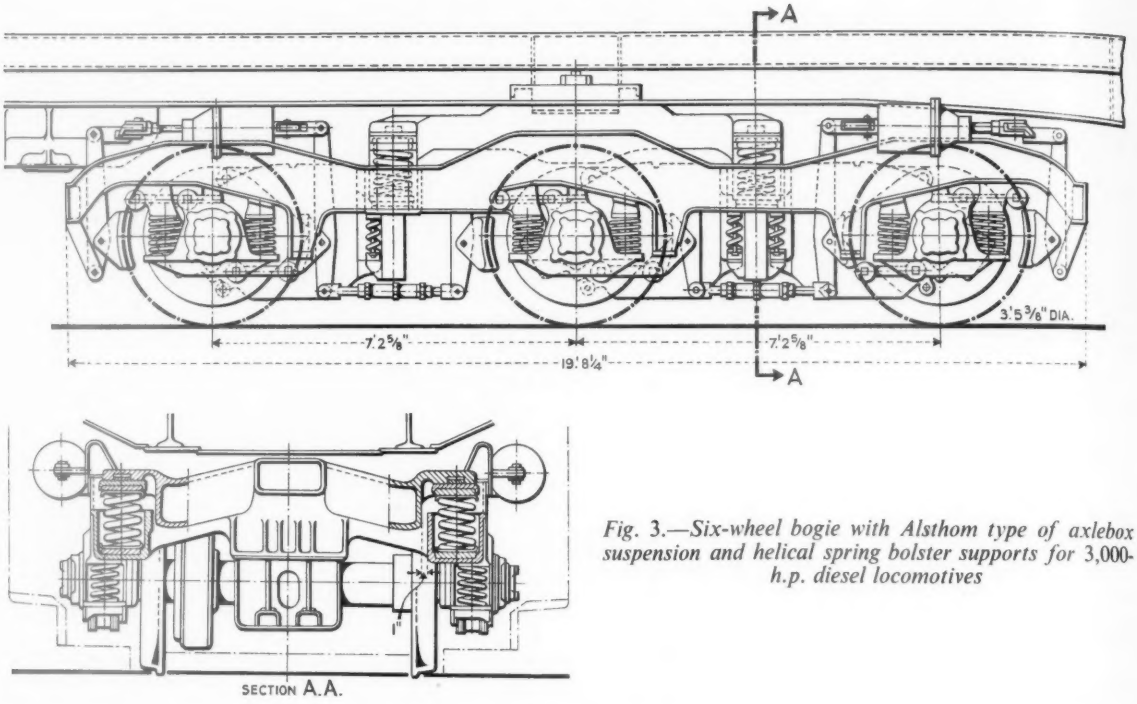



*Fig. 3.—Six-wheel bogie with Alsthom type of axlebox suspension and helical spring bolster supports for 3,000-h.p. diesel locomotives*

26·4 *tonnes*. This design is not considered very favourably because of its weight, difficult accessibility of the traction motors, and high production costs.

The second design (Fig. 2) for 147-*tonne* 4,000-h.p. diesel locomotives incorporates Alsthom type primary suspension. The use of laminated springs underslung to the axleboxes was not practicable because of the small wheel dia. of 3 ft. 5½ in. Laminated springs in conjunction with equalisers were not favoured because of the erratic action of the former. The bogie weight is calculated as 24·5 *tonnes*.

This departure from equalised suspension so far favoured with Russian diesel and electric locomotives is justified on the score of reduced stiffness of the primary suspension, whilst at high speeds the inertia of the equalising beams tends to negate possible advantages maintained at lower speeds.

The relative ineffectiveness of laminated springs was demonstrated during the tests of the "TE.7" locomotive when it was found that at 60 m.p.h. the springs were virtually acting as equaliser beams, the spring action being provided by the helical springs at the bogie ends only. The individual spring deflections of 2 to 3 mm. did not coincide with the action of the helical springs, and it was only at speeds in excess of 62 m.p.h. that the laminated springs began to act with the same frequency as the end units. Calculations have shown that at speeds of 62 m.p.h. the laminated spring deflection should be about 19 to 21 mm. compared with measured values of only 2 to 3 mm., though it must be admitted that to some extent this is due to heavy friction caused by the use of no less than 18 leaves in one assembly.

### Latest Bogie Design

As an optimum bogie design for use with 3,000-h.p. diesel-electric locomotives the Kolomna Works now suggest the layout shown in Fig. 3. This is based on the use of Alsthom type of primary suspension, whilst the General Motors Electromotive Division flexicoil arrangement forms the basis for the secondary suspension. The adoption of the Alsthom system is no doubt due to its simplicity and the elimination of rubbing parts with consequent wear and need of lubrication, whilst an order for a number of Co-Co 50-cycle electric locomotives from France has made Soviet designers more familiar with this layout.

The advocacy of a bolster suspension following the G.M. design is influenced by its simplicity leading to the elimination of swing links and the usual paraphernalia of bolster components, along lines previously evolved for passenger coaches and railcars[4] by making helical springs to deal with vertical as well as lateral oscillations. The static deflection of the primary springs is about 2 in., and is of the same order as that allocated to the secondary springs, which in addition are allowed to deflect 1 in. to each side. Hydraulic dampers are fitted but not shown in Fig. 3. With the proposed layout it will be necessary to fit either hydraulic or friction dampers across the bolster springs both in the vertical as well as horizontal plane, though the performance of friction damping might prove to be somewhat erratic due to difficulties in maintaining reliably constant friction values in service.

**References**

[1] "Soviet Type TE.3 Diesel-Electric Locomotive," *Diesel Railway Traction*, January, 1958

[2] M. S. Malinov and L. V. Rodionova, "The Ways of Improving the Dynamic Characteristics of Diesel Locomotives," *Shelesnodorshni Transport*, Vol. 40, No. 10 (October, 1958) (in Russian)

[3] "Running of Diesel-Electric Locomotives," *Diesel Electric Traction*, May, 1958

[4] J. L. Koffman, "Railcar Bolster Suspension," *Diesel Railway Traction*, June, 1950

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BRITISH STANDARD FOR GIRDER BRIDGES.—The British Standard for girder bridges, B.S. 153, in its third revision since originally issued in 1922, now consists of three publications. The first contains Part 1, "Materials, Workmanship, Protection against Atmospheric Corrosion," and Part 2, "Weighing, Shipping and Erection." Because of modifications in the loading requirements for railways, and of other factors, the present general revision was preceded by the issue in 1954 of Part 3A, "Loads." The third publication contains Part 3B, "Stresses," and Part 4, "Design and Construction." The specification is intended primarily to apply to design and fabrication procedure for the superstructure of simply-supported steel bridges of maximum efficiency and spans up to 300 ft. The requirements of the specification also may be adopted for larger spans or other types of steel bridges, though care must be taken to make whatever amendments are necessary for fixity at the supports, continuity and other indeterminate or special conditions. Copies, price 6s., for Parts 1 and 2, and 15s. for Parts 3B and 4, may be obtained from the British Standards Institution, 2, Park Street, London, W.1. Part 3A, price 7s., will continue to be available separately until it is incorporated in the same publication as Parts 3B and 4.

# Main-Line Diversion in Puget Sound

*Rock dumping from flat wagons with compressed-air-operated equipment to form causeway in arm of sea*

THE Great Northern Railway (of U.S.A.) main line from St. Paul to Seattle skirts Puget Sound, an inlet of the Pacific Ocean, just north of Seattle. For rather more than a mile this double-line section runs along with the shore of the Sound immediately below it on one side and steep and high bluffs above it on the other. For years past landslides and rock falls from the bluffs have frequently caused the line to be closed.

It was therefore decided to build a diversion or by-pass across a bay in the Sound parallel to and generally about 100 ft. distant from the old alignment, at a cost of about £450,000. At one point the new centre line is 165 ft. from the old. The diversion is a single line carried on a rock fill to resist heavy weather, wave and tide action.

### Wood Pile Trestle

A wood pile and trestle viaduct was first built along the new alignment in three sections. On this a temporary track was laid and trains consisting of 40 50-ton wagons brought loads of rock from a quarry in the Cascade Mountains 65 miles away. The side-dump wagons unloaded large boulders, on the outer side first, up to future formation level, and bulldozers pushed the rock into place between trains. As each section was completed the track and stringers of the viaduct were moved forward to the next section, and the trains then filled in the embankment by dumping from the permanent track on the landward side.

### Rock Dumping by Compressed Air

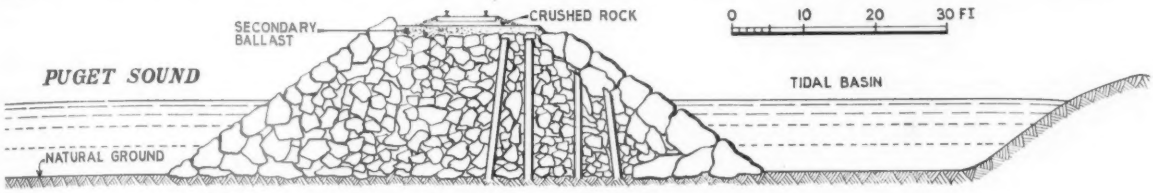
A flat wagon equipped with a portable air compressor was shunted into the centre of each rock train when it arrived at the re-location site. Air from the compressor-activated dumping mechanism and speeded unloading. Toward the completion of the project dumping crews were able to unload 45 wagons in 16 min.

Ballasting, compacting and packing completed the work, which was accomplished in nine months. Altogether, some 7,000 wagon loads or 211,000 cu. yd. of quarry rock were used, with 111 wagon loads of secondary crushed stone and 6,000 cu. yd. of crushed stone ballast above it. A final dumping of 6,000 cu. yd. of large rock was used as a berm for weather protection.

### Culverts

Seven 6-ft. concrete culverts were placed at intervals along the alignment to be later covered by the fill, for equalisation of tidal flow and to allow of access by pedestrians.

The top of rail elevation of the new line is an average of more than 3 ft. above that of the old line. At average high tide the water level will be 9·5 ft. below the sub-grade. The average low tide level is 16·5 ft. below sub-grade and mean low tide is 21·5 ft. below the same mark. At maximum high tide the sub-grade will be 7 ft. above water level.




*Section of causeway, showing large rock used as berm and track formation*

BOOKINGS FOR CAR-SLEEPER TRAINS.—Many advance bookings are reported for the car-sleeper trains between Marylebone and Glasgow, Manchester and Dover (for the Continent), and Birmingham and Stirling, which begin running in May.

*The "Empire Builder" of the Great Northern Railway on the re-located section. Old double-track line in foreground along toe of unstable slope*

# Pre-Electrification Works at Dover Marine

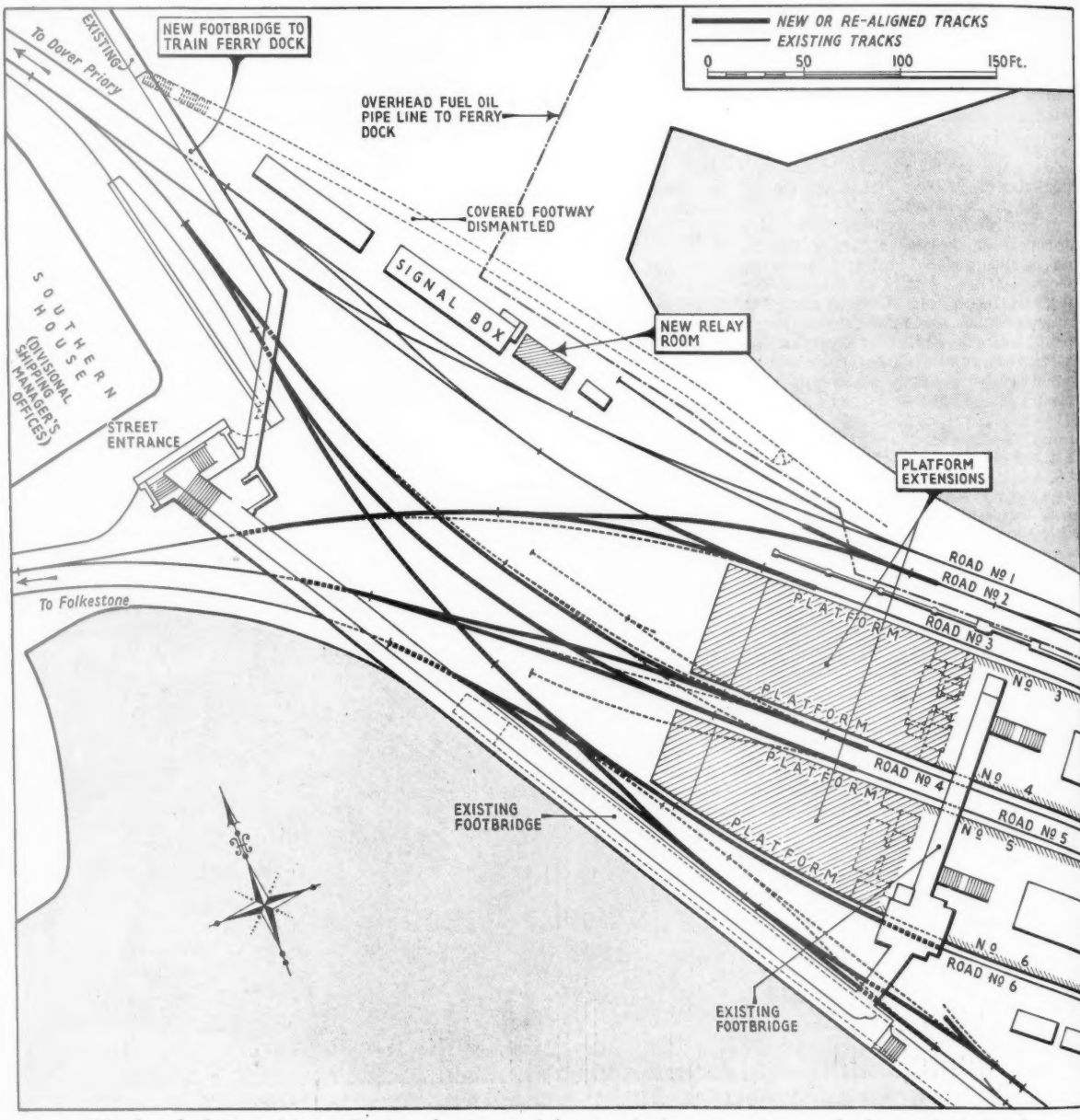
*Alteration of track layout and other work necessitated by platform lengthening to take 12-car trains*

TO accommodate 12-car multiple-unit electric trains on inauguration of electrification from London via Faversham in June, the two island platforms at Dover Marine, Southern Region, are being extended by 114 ft., with 24-ft. ramps. This necessitated altering the layout of the tracks at the London end, as shown in the diagram; replacement of the covered way to the Train Ferry dock, at present at ground level, by a footbridge from the upper landing of the stairs at the (Lord Warden) entrance from the street, to link up with the existing footbridge at the top of the staircase now being demolished with the existing covered way; and shifting of the oil fuel pipe line from the store tanks to the ferry berth; and shifting of signals controlled by the manually-operated box to the north-east of the station.

At the same time, power-operated point machines have been installed, and steam-pipes for train heating are being laid to serve four tracks in the station. A relay room built next to the signal-box, with provision for colour-light signalling, the installation of which is under consideration in connection with extension of electrification from Sevenoaks via Ashford to Dover, Deal and Ramsgate.

### Complete Closure of Station

The station was closed at 6 a.m. on February 20 and will be reopened on March 1. During that period cross-Channel services are being diverted to




*North end of Dover Marine Station, showing track layout, platform extensions, and other works in hand*

Folkestone, apart from the motorcar and train ferries, which have worked as usual. The tracks to the train ferry dock are not affected. By the end of the week, track work will have been completed, and the spans of the footbridge erected.

The superstructure of the latter will be completed subsequently. Extension of the platforms will be begun shortly, and is due for completion by the end of May. The full width of the extended platforms between tracks 3 and 4 and tracks 5 and 6 will be roofed with umbrella roofing.

### Permanent Way Alterations

Track alterations were effected in double shifts. Work began at 6 a.m. on February 21 and continued with only brief intermission, until 5.30 p.m. on February 24. Complete possession by the Chief Civil Engineer's department was obtained for the period of nearly 84 hr.

Wagons of old and new sections were moved as required by one diesel locomotive. Two 10-ton cranes were used simultaneously. Planning of crane movements was complicated by the existing footbridge over the tracks leading to Folkestone. Prefabricated lengths were brought in on bogie wagons. Rails are standard 109-lb. flat-bottom. The diamond crossings are of manganese steel.

### Trackwork Programme

The trackwork programme provided for five stages most of them worked by two shifts.

Stage 1 consisted of Nos. 2 and 3 roads, as shown in the diagram, using steam crane No. 1. Stage 2, concurrent with Stage 1, embraced Nos. 6, 7, and 8 roads, using crane No. 2. These stages were scheduled for completion between 6 a.m. on February 21 and 5.30 a.m. on February 22.

In Stage 3, to be completed between 6 a.m. on February 22 and 5.30 a.m. on February 23, existing diamond crossings were replaced, using both cranes in the day shift and one crane during the night. Compressors were used to break out and clear concrete slabs from under the old diamond crossings and to replace by Meldon Dust and stone chipping ballast.

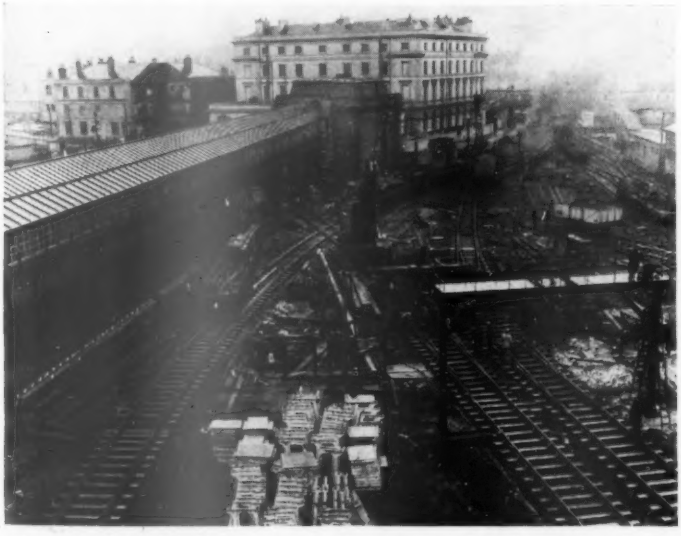
This work was continued in Stage 4, scheduled for the 23½ hr. ended 5.30 a.m. on February 24, and using one crane. Stage 5, due to end at 5.30 p.m. on February 24, completed the point-and-crossing work, using one crane.

### Erection of Footbridge Spans

To ensure co-ordination with the trackwork, and to afford space for erection of the bridge supports, it was arranged that two end spans of the new footbridge could be erected before completion of Stage 5. The trestle could not be begun until completion of the trackwork, but all spans are to be completed before resumption of traffic on March 1.

Concrete screen walls are to be provided on the outer side of roads Nos. 3 and 6. It was necessary also to close the roadway leading from the street entrance to the Admiralty Pier (to the south of the station) and across the existing north end of the station.

*North end of Marine Station, showing site of platform extensions. Stage 3 track alterations in progress*



*View northwards from station, showing track alterations during stage 3, and site of new footbridge to train ferry berth*

### Electrification

The lines over which electrification is to be inaugurated in June include that from Faversham via Dover Priory to Dover Marine and the Dover triangle.

A second stage will comprise electrification from Sevenoaks to Tonbridge, Ashford, and thence to Ramsgate via Canterbury West and via Dover and Deal. Certain Continental boat expresses will be hauled by electric locomotives, and the remainder will be formed of multiple-unit electric stock.

### Self-Propelled Baggage Vans

Some boat trains, other than those in connection with the Train Ferry, include baggage vans or flat wagons for containers. These are attached to the London end. On arrival at Dover Marine from Victoria, vans and flat wagons are shunted by an engine on to the quayside roads for easy loading into the ship. A similar process takes place in the reverse direction, when vehicles are drawn from the quayside roads and attached to the front of the train by the train engine. As it is impracticable to lay conductor rails on the tracks sunk in the quayside, battery-driven baggage vans will be built for attachment to boat trains.

The track layout was altered and the constructional work is being carried out under the general supervision of Mr. A. H. Cantrell, Chief Civil Engineer.

# Limited-Express Train for Japanese National Railways

*Thirteen-car sets for Tokyo-Hakata service*

*Rear observation saloon of* 13*-car limited-express train "Asakaze"*

THE limited-express train, the "Asakaze," was recently placed in service on the 3-ft. 6-in. gauge Japanese National Railways between Tokyo and Hakata, a principal city on the island of Kyushu. The train completes the 733-mile journey between the two cities in 17 hr. 10 min., and runs through the undersea Kammun Tunnel which connects the principal island of Honshu with Kyushu. It is hauled by an electric locomotive over the 344-mile Tokaido main line between Tokyo and Osaka and is steam hauled for the remainder of the journey.

The train is made up of 13 coaches, eight of which are sleeping cars. Of the remaining five, one is a generator coach for supplying power throughout the train, with a baggage compartment, and one a restaurant car. The other three are centre-gangway saloon type coaches, one second and two third class. There is a total accommodation for 524 passengers.

### Power Plant

The power plant consists of two 340-h.p. diesel-generators supplying three-phase 60-cycle 600-V. a.c. throughout the train. This is transformed into 200-V. three-phase and 100-V. single-phase current for air-conditioning, heating and cooking.

Two 7½-h.p. unit coolers are installed under the floor of each coach. The cooled air is passed through ducts and distributed through ventilators in the ceiling. One of the coolers is replaced with a heater in the winter months. All the windows are double-glazed. Aluminium sheeting with a bonded plastic surface is used for the interior finishing. The ceiling is covered with a perforated sound-absorbing board, and finished with the plastic-covered aluminium sheet. To minimise noise, rubber is used between body and underframe. The body itself is sprayed with fibre glass and asbestos. This also provides heat insulation.

One of the two second class sleeping cars has 10 single bedrooms. The other has 10 rooms with twin bunks, but the partition between the two rooms nearest the vestibule can be removed to make a four-bunk room. The beds in the third class sleepers are built in three tiers.

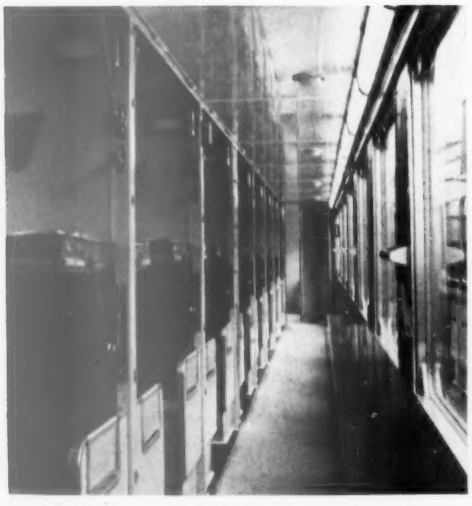
Each passenger coach has double seats on either side of a centre gangway. The second class seats can recline independently of each other and swivel round to face the opposite direction. There is a collapsible table on the arm of each seat. In the third class coaches the seats do not recline, but each pair can be turned to face the opposite direction. They have a collapsible table fitted to the back.

Interior lighting is by 40-W. fluorescent lamps in two rows down the centre of each passenger coach. All the sleeper compartments have individual spot lights.

### Bogie Design

The bogie frames are built up of ¼-in. pressed-steel welded plate members, incorporating coil springs for the journal boxes and air springs for the bolster.

Two train sets, to operate the up and down service each day, and several spare vehicles have been built. They were ordered from two different manufacturers: Hitachi Limited and Nippon Sharyo Seizo Kaisha Limited.



*Interior of third class sleeper coach*

*Third class passenger coach. Note roof ventilators and lighting*

# RAILWAY NEWS SECTION

## PERSONAL

Mr. J. L. Toole, Comptroller, Canadian National Railways, has been appointed Vice-President, Accounting & Finance.

We regret to record the death, on February 20, at the age of 85, of Sir George Beharrell, Chairman of the Dunlop Rubber Co. Ltd. from 1937 to 1949, when he became President, a position held until 1957. Sir George Beharrell joined the North-Eastern Railway as a junior clerk in 1888. He served as Chief Clerk to the Deputy Chairman, and later as Assistant to the General Manager, before becoming Assistant to the Goods Manager in 1907, and Assistant Goods Manager in 1913. In 1915 he went to the Ministry of Munitions with Sir Eric Geddes. He became Assistant Director-General of Transportation in France, and later Assistant Inspector-General of Transportation in all theatres of war. In 1917 he was transferred to the Admiralty as Director of Statistics. Appointed Director-General of Finance & Statistics at the then newly-formed Ministry of Transport in 1919, he was knighted in the same year. He was Financial Adviser to the Geddes Committee on National Expenditure from 1921 to 1922, when he became Managing Director of the Dunlop Rubber Co. Ltd. He was President of the India Rubber Manufacturers' Association from 1926-28; of the Society of Motor Manufacturers & Traders, 1927-29; of the Federation of British Industries, 1932-33; and of the Institution of the Rubber Industry, 1933-36. He was on the board of Imperial Airways from 1924 until it was incorporated in B.O.A.C. in 1940. In 1942 he was made Director-General of Controls at the Ministry of Supply.

Mr. R. L. Thomas has been appointed General Manager, British Brown-Boveri Limited. He succeeds the late Mr. H. Oswald. Mr. R. H. Coates, Manager of the Electrical Section, will act as his deputy.

Mr. C. H. Cowtan, General Secretary of the Railway Benevolent Institution, retires on February 28 and will be succeeded by the present Assistant Secretary, Mr. W. C. Wayland-Carr. Mr. R. A. Scott has been appointed Assistant Secretary.

B.T.C. APPOINTMENTS

The British Transport Commission announces the following appointments:—

*Secretary General's Department*

Mr. H. J. Locke, Administrative Assistant, Shipping & International Services Department, Works & Equipment Section, to be Assistant (Works).

*British Railways Central Staff*

Mr. K. J. Anderson, Assistant (General), Freight Section, Traffic Department, to be Assistant (Freight Rates).

Viscount FitzAlan and Sir Basil Goulding have retired from the board of the Pullman Car Co. Ltd.

Major-General A. E. Walford has been elected Chairman of the Board of Directors of Canadian Vickers Limited.

Mr. A. T. Crawford has been appointed Manager, Home Contracts Department, A. Reyrolle & Co. Ltd.

*The late Sir George Beharrell*

President of the Dunlop Rubber Co. Ltd., 1949-57

Following on the change of control of the British Aluminium Co. Ltd., Lord Portal and Mr. Geoffrey Cunliffe, Chairman and Deputy Chairman respectively, have left the boards of that company and all its subsidiary and associated companies. Sir Ivan A. R. Stedeford has been elected a Director and Chairman of the board of the British Aluminium Co. Ltd. and Mr. Richard S. Reynolds has been elected a director.

L.M.R. APPOINTMENTS

London Midland Region, British Railways, announces the following appointments:—

Mr. F. L. Lambert as Assistant Civil Engineer, Euston.

Mr. A. D. Cochran as District Operating Superintendent, Liverpool (Lime Street).

Mr. H. W. T. Young as District Traffic Superintendent, Chester.

Mr. T. D. Cook as District Estate Surveyor, Preston.

Mr. Ian W. Smith has been appointed a director of the Morgan Crucible Co. Ltd.

Mr. F. L. Lambert, Assistant Engineer (Works Maintenance), Paddington, Western Region, British Railways, has been appointed Assistant Civil Engineer, London Midland Region.

Mr. Guy W. Wilson, General Manager, Locomotive & Car Equipment Department, International General Electric Company is making a business tour through South America.

We regret to record the death, on February 21, of Mr. P. Hackforth, Chief Engineer, East Indian Railway, 1935-36.

Mr. F. H. Jaekel, Deputy Chief Superintendent (Power), Nigerian Railway Corporation, has assumed responsibility for the office of Deputy Chief Superintendent (Traffic).

Mr. T. L. Kendall, Sales Director, Ruston & Hornsby Limited, is making a business tour of the Middle East and Africa. He will visit Cairo, the Sudan, East African territories and South Africa before returning in May.

Mr. W. H. McFadzean has been appointed to the boards of the Midland Bank Limited and the Midland Bank Executors & Trustee Company. He is Chairman of British Insulated Callender's Cables Limited and of British Copper Refiners Limited. Mr. McFadzean is also Deputy President of the Federation of British Industries and a member of the Institute of Directors Council.

Mr. F. R. L. Barnwell, District Engineer, Newport, Western Region British Railways, has been appointed Assistant Engineer (Works Maintenance) to the Chief Civil Engineer, Western Region.

Mr. C. S. F. Lane has been appointed Regional Manager for Australia & New Zealand in the Overseas Organisation in London, of British Insulated Callender's Cables Limited. He succeeds Mr. R. H. Semple, who has taken up an executive position with an associate company in Australia.

Mr. L. T. Hinton, Standard Telephones & Cables Limited, has been elected Chairman of the Electronic Engineering Association. He succeeds Mr. F. S. Mockford, Marconi's Wireless Telegraph Co. Ltd. Mr. R. R. C. Rankin, Mullard Limited, has been elected Vice-Chairman.

Mr. M. G. Burrows, Chief Mechanical & Electrical Engineer (designate), North Eastern Region, British Railways, has now assumed responsibilities in that region, as a result of which the following appointments have been made: Mr. A. S. Bramworth as Assistant Mechanical Engineer (Carriages & Wagons); Mr. F. H. Jarvis as Assistant (Electrical Engineering), and Mr. F. Collingwood as Staff Assistant.

UNIVERSITY OF MICHIGAN LIBRARIES

*Mr. M. G. Cooper*

Appointed Commercial Officer, Birmingham, Western Region

*Mr. D. C. I. Reynolds*

Appointed Running & Maintenance Officer, Western Region, Bristol.

*Mr. C. R. L. Rice*

Appointed Running & Maintenance Officer, Birmingham, Western Region.

Mr. M. G. Cooper, District Commercial Manager, Gloucester, Western Region, British Railways, who, as recorded in our January 2 issue has been appointed Commercial Officer, Divisional Traffic Manager's Office, Birmingham, joined the G.W.R. in the Rates Department, Chief Goods Manager's Office, Paddington in 1921. After experience of station working, at Manchester Goods and Paddington, he returned to the Chief Goods Manager's Office. He took up special liaison work with the War Department from June, 1941, until he became Shed Superintendent, Hockley Goods Station, Birmingham, in June 1943. Mr. Cooper returned to Paddington in 1945, on the Chief Goods Manager's Outdoor Staff. In 1947 he was appointed Goods Agent, Slough, and took temporary duty as Assistant in the Office of the District Goods Manager, Reading, in 1952. He returned to Paddington as Head of the Road Transport Section, Commercial Superintendent's Office, later that year, and became Assistant to the District Commercial Superinendent at Swansea in 1953. In 1954 he was appointed Assistant District Commercial Manager, Exeter, and in October, 1956, District Commercial Manager, Gloucester, the appointment he now relinquishes.

Sir John Dean has been appointed a director of British Insulated Callender's Cables, Limited.

D. Napier & Son Ltd. announces the appointment of the following to its board: Viscount Caldecote; Sir John Paget, who has also been appointed General Manager; Mr. A. J. Penn, as Technical Director. Sir Archibald Hope, who is already a director, becomes Director of Sales (Air).

Mr. S. A. A. Knott resigned as Secretary of Charles Roberts & Co. Ltd., upon his appointment as Managing Director of S. J. Claye Limited, industrial bankers, a subsidiary of Charles Roberts & Co. Ltd. Mr. Leslie Barron has been appointed Secretary of Charles Roberts & Co. Ltd.; and Mr. Leslie Artingstall becomes Assistant Secretary. Mr. Alexander D. Stark has been appointed Secretary of S. J. Claye Limited.

Mr. D. C. I. Reynolds, A.M.I.Mech.E., District Running & Maintenance Officer, Bristol, Western Region, British Railways, who, as recorded in our January 2 issue, has been appointed Running & Maintenance Officer, Divisional Traffic Manager's Office, Bristol, began his railway service in 1929, as an engineering apprentice on the London Midland & Scottish Railway. After serving as a pupil in the Drawing Office and Running Shed, Crewe; Head Office, Euston; and Divisional Headquarters, Crewe, he was appointed Mechanical Foreman at Bristol, in 1936. He became, successively, Shedmaster at Coventry, Sutton Oak, and Goole. Mr. Reynolds served with Railway Transportation Units, Royal Engineers, from 1940 to 1946, attaining the rank of Lieutenant-Colonel and was awarded the M.B.E. On demobilisation, he was appointed Assistant Divisional Locomotive Superintendent, Shrewsbury, a position re-designated Assistant District Motive Power Superintendent in 1948. He later served in a similar capacity at Worcester and at Bristol. In 1955 he became Assistant to the Motive Power Superintendent (Productivity), Swindon. The following year he was appointed District Motive Power Superintendent, Bristol, the position being subsequently re-designated District Running & Maintenance Officer.

Mr. W. L. Valenta has been appointed Sales Development Engineer of Workington Iron & Steel Company. Mr. Valenta, who was formerly Production Research Engineer, will now be responsible to the company's Commercial Manager.

Mr. A. Harold and Mr. R. Edwardes have been appointed to the board of Electro-Hydraulics Limited. Mr. Harold is a director of Conveyancer Fork Trucks Limited and Chief Engineer of Electro-Hydraulics Limited. Mr. Edwardes is a director and Secretary of Conveyancer Fork Trucks Limited and Secretary of Electro-Hydraulics Limited. Both companies are members of the Owen Organisation. Mr. T. C. Wright, a director and Works Manager of Electro-Hydraulics Limited, has been appointed a director of Conveyancer Limited.

Mr. C. R. L. Rice, O.B.E., E.R.D., District Running & Maintenance Officer, Wolverhampton, Western Region, British Railways, who, as recorded in our January 2 issue, has been appointed Running & Maintenance Officer, Divisional Traffic Manager's Office, Birmingham, was educated at St. Peter's School, York. Mr. Rice joined the L.M.S.R., in 1924, as a premium apprentice at Horwich Locomotive Works. He subsequently transferred to the Midland Division as an improver at Kentish Town Motive Power Depot, and later at the Divisional Motive Power Office, Derby. In 1929 he was appointed Running Shed Foreman, Stratford-on-Avon, and was transferred, in 1932, to Royston, Barnsley, to take charge of the new Motive Power Depot then under construction. In 1934, he returned to the Divisional Motive Power Office, Derby, as Headquarters Mechanical Inspector and subsequently as Running Inspector. Mr. Rice was appointed Assistant District Motive Power Superintendent, Saltley, in 1937. In 1942 he was posted, while on Military Service, as Utilisation Assistant to Divisional Superintendent of Motive Power, Manchester, and, in 1946, to Willesden as District Motive Power Superintendent. He was commissioned in the Supplementary Reserve, R.E. (Transportation), in 1932, and was called up in 1939. He served in France and Persia. Returning to England, in 1942, he commanded 927 Railway Workshops Company R.E. and later No. 7 Railway Operating Group R.E., before being appointed Assistant Director of Transportation, 21 Army Group, North West Europe. He was appointed Deputy Director (Railways), Essen with the rank of Colonel in 1945. He was twice mentioned in dispatches and awarded the O.B.E. and the Order of Patriotic Warfare II Class by the U.S.S.R. In 1946 he formed and commanded 18 Railway Group R.E. Emergency Reserve, which position he held until 1950. During that year Mr. Rice transferred to the Western Region, British Railways, as District Motive Power Superintendent. Old Oak Common. In 1951 he moved to the similar position at Wolverhampton. This appointment was later re-designated District Running & Maintenance Officer.

*The late Mr. W. R. Robertson*

Public Relations Officer, London Transport Executive, 1948-50

*Mr. C. N. MacKay*

Appointed Public Relations & Publicity Officer, Scottish Region

*Mr. H. M. Hunter*

Appointed Assistant (Special Duties) to the General Manager, Scottish Region

We regret to record the death on February 20, at the age of 57, of Mr. W. R. Robertson, Public Relations Officer, London Transport Executive. Mr. Robertson began his transport career, in 1916, when he joined the Underground group of companies in the Commercial Manager's Department. In 1933, as a member of the Secretary & Treasurer's Department, he played an important part in the formation of the London Passenger Transport Board. Two years later he joined the newly-established Public Relations Office, becoming a senior assistant in 1944. He was appointed Acting Public Relations Officer in 1947, and was confirmed in this position in May 1948. He became an officer of the London Transport Executive in 1949. Mr. Robertson was a Fellow of the Association of Certified & Corporate Accountants, an Associate Member of the Corporation of Certified Secretaries, and a Member of the Institute of Transport.

Mr. J. D. Paybody, Secretary, Mather & Platt Limited, has joined the board of the company.

INSTITUTION OF CIVIL ENGINEERS

The following names are among those added to, or transferred in, the register of members of the Institution of Civil Engineers:—

*Members*

Mr. F. G. B. Clayton, S.W. Division, British Transport Waterways.

Mr. C. M. Field, Nigerian Railway Corporation.

*Associate Members*

Mr. F. G. Brown, Messrs. Livesey & Henderson.

Mr. R. K. Hayward, Sir Wm. Halcrow & Partners.

Mr. J. C. Moore, East African Railways & Harbours.

Mr. L. C. Slater, Messrs. Freeman, Fox & Partners.

Mr. A. R. Stares, Singapore Harbour Board.

*Graduates*

Mr. C. P. Davis, Sir Wm. Halcrow & Partners.

Mr. J. M. Turnbull, Messrs. Rendel Palmer & Tritton.

Mr. Colin Neil MacKay, Assistant (Public Relations) to the General Manager, Scottish Region, British Railways, who, as recorded in our February 6 issue, has been appointed Public Relations & Publicity Officer, left an honours course at Glasgow university, where he was reading English language and literature, to take up an appointment with the Scottish *Daily Express*. During the war he served with the Royal Air Force as a Controller of Operations and later as Public Relations Officer. Mr. MacKay, who had been a regular broadcaster for many years, joined the News Division, British Broadcasting Corporation, in Scotland in 1951. He has had a wide experience in the presentation of programmes on the B.B.C. and covered most of the Royal visits to Scotland, taking the place of the B.B.C. London Court Correspondent, travelling in the Royal entourage. In June last year he was appointed Assistant (Public Relations) to the General Manager, Scottish Region, British Railways. Mr. MacKay was Honorary Secretary & Treasurer of the Scottish Commando Benevolent Fund and served on the Committees of many charitable organisations including Friends of France, King Georges Fund for Sailors and Queen's Nurses Pension Appeal.

Mr. S. E. Graeff has not sought re-election as a director of the Steel Company of Wales, and now resides in the U.S.A.

The English Electric Co. Ltd. announces the following re-designations: Mr. E. B. Banks as Director of Commercial Policy, Contracts & Sales; Mr. P. L. de Laszlo as Director of Corporate Affairs; Mr. W. M. Hurton as Director of Group Manufacturing Development; and Mr. L. H. Short as Director of Overseas Operations.

Mr. James Hodge, has been appointed to the newly-created position of Chief Engineer of the Holman Group. The appointment will result in the co-ordination of all research, design and development throughout the companies of the group. Mr. Hodge previously was Chief Engineer, Power Jets (Research & Development) Limited.

Mr. H. M. Hunter, A.M.Inst.T., Public Relations & Publicity Officer, Scottish Region, British Railways, who, as recorded in our January 23 issue, has been appointed Assistant (Special Duties) to the General Manager, Scottish Region, began his railway career with the Glasgow & South Western Railway in 1916. After experience at stations, various departments of the Commercial Manager's Office, and in the Office of the Chief Officer for Scotland, L.M.S.R., he became Personal Clerk to the Commercial Manager. He served in various sections of the Advertising Department of the Commercial Manager's Office, before his appointment as Head of the Department in 1947. On nationalisation, in 1948, Mr. Hunter was appointed Public Relations Officer and, the following year, Public Relations & Publicity Officer of the Scottish Region of British Railways. He is a Member of the Council of St. Andrew's Ambulance Association.

Mr. C. H. Chaplain, Manager of the Publicity Department, British Thomson-Houston Co. Ltd., has retired. He is succeeded by Mr. H. G. Harlow, Manager of the B.T.H. Newcastle District Office. Mr. Chaplain joined the staff of the Switchgear Drawing Office, B.T.H., Rugby, in 1912. He served an apprenticeship with Siemens Brothers Dynamo Works Limited, at Stafford. In 1913 Mr. Chaplain joined the newly formed Publication (now Publicity) Department at Willesden, of which he became Manager in 1948. He has served on many committees, including B.E.A.M.A. Publicity Committee, of which he was Chairman from 1952 to 1954. Mr. Chaplain was elected an Associate of the Institution of Electrical Engineers in 1950. During the 1914-18 war he served in the Royal Engineers and was mentioned in despatches. Mr. Harlow joined B.T.H. in 1920 and entered the Design Engineering Department, in 1922. He later transferred to the Supply Department (now Industrial Machines Department) as a Commercial Engineer. He was transferred to the London Office from 1932 until being appointed Manager, Leeds District, in 1948. He became Manager, Newcastle District, in 1955.

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XUM

# NEW EQUIPMENT AND PROCESSES

## Excavating Equipment

A NEW attachment, the J.C.B. Hydra-Digga, recently contributed to the speedy completion of a considerable engineering job carried out on the Eastern Region of British Railways.

The object of the work, which was carried out at Stoke Tunnel, near Grantham, was to lower and re-ballast the up line through the tunnel to a depth of from 1 ft. to 1 ft. 3 in.

Possession of the tunnel could be granted for only 16 hr. each week-end and the operation accordingly was spread over three Sundays. Time allocated for excavation of old ballast was a maximum of six hours each Sunday.

Three Track Marshall excavating machines equipped with J.C.B. Hydra-Diggas were used on the work, together with a J.C.B. Hydra-Digga on rubber wheels. The spoil was loaded into 5/6 board wagons standing on the down line.

The machines were able to reduce normal excavation time by about one hour, a performance which considerably helped the railway engineers to maintain the relaying schedules.

The Track Marshall—J.C.B. Hydra-Digga basically is the Track Marshall diesel crawler tractor made by Marshall Sons & Co. Ltd. of Gainsborough. This machine, driven by a Perkins L4 40 b.h.p. diesel engine, has six forward speeds, 1·31 to 5·15 m.p.h., and two reverse speeds.

The Hydra-Digga attachment, which is fitted to the rear of the tractor, comprises a hydraulically-operated boom with bucket attachment. The boom swivels through 180 deg., will reach 18 ft., dig to a depth of 13 ft., and discharge at a height of 10 ft. 8 in. These capacities can be increased for ditch cleaning.

Digging attachment has a broad and substantial "A" frame to prevent "pull-back." All hydraulic rams are double-acting, with crowd-ram designed to ensure a full bucket every dig. Hydraulics are highly efficient, oil being specially filtered and fed by wire-reinforced short hoses to the rams.

Buckets used on this operation were 48 in. wide with a capacity of ¾ cu. yd. Other sizes are available, also square hole attachment and face shovel.

When it is required to use the basic machine as a crawler tractor or bulldozer the Hydra-Digga attachment can be removed in a matter of minutes.

Further details can be obtained from Thos. W. Ward Limited, Albion Works, Sheffield, and J. C. Bamford (Excavators) Limited, Rocester, Staffs.

## Stretcher/Ladder

THE manufacturers and distributors of the Gloster Stretcher/Ladder, which was illustrated and described in this section in our January 9 issue, have sent us the following new information regarding their product.

In accordance with a recommendation made by the British Standards Institute, each section of the appliance has been reduced from 7 ft. 8 in. to 7 ft. 6 in. When sections now are joined, they provide ladders 14 ft. 6 in. and 21 ft. 6 in. in length.

Because of increased manufacturing costs, the price, ex-works, now is £17 17s. 6d. Cost of the carrying-sheet remains at £1 5s.

## Permanent Locking

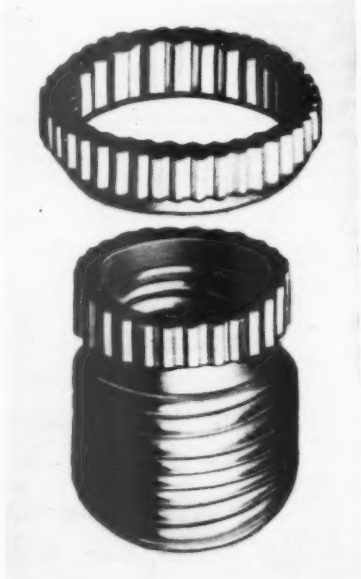
DESIGNED to facilitate firm attrachment of a casting to lightweight metals such as aluminium and magnesium alloys, the Rosan permanently locked studs and inserts differ from conventional studs in the addition of a serrated collar. The stud is screwed into a countersunk hole in the parent metal. The lock ring is positioned so that its inner serrations engage with the serrated collar of the stud. The ring then is driven into the countersunk recess. Its outer teeth, undercut to form broaches, cut into the metal until the ring is flush with the surface.

Once secured, the stud becomes part of the parent body. If necessary, it can be removed quite simply and replaced with an identical unit. Removal is effected by cutting out the locking ring with a hollow drill in such a way that the teeth are left in the walls of the countersunk recess. The stud then may be unscrewed, for the thread formed in the parent metal will be undamaged by removal of the collar. A new stud and ring of the same or larger size then can be fitted.

No special drills, taps or gauges are required for fitting, which is carried out with standard National fine or coarse tapping. Studs are manufactured with a very slightly oversize effective external diameter to ensure a snug fit. Simple installation wrenches and punches are available. Although these are helpful, they are not essential. Installation does not exert stress or cause distortion.

The studs are particularly suitable for use where positive locking is required under conditions of vibration, high stress, and temperature changes; where assembly and dismantling is frequent, especially in soft material; where high torque is required for installation and removal of mating nuts and bolts, and for use in conditions where rust, corrosion, or mechanical jamming may be expected.

Further details can be obtained from the manufacturer, Instrument Screw Co., Ltd., Northolt Road, South Harrow, Middlesex.



## Multi-Circuit A.C. Switch

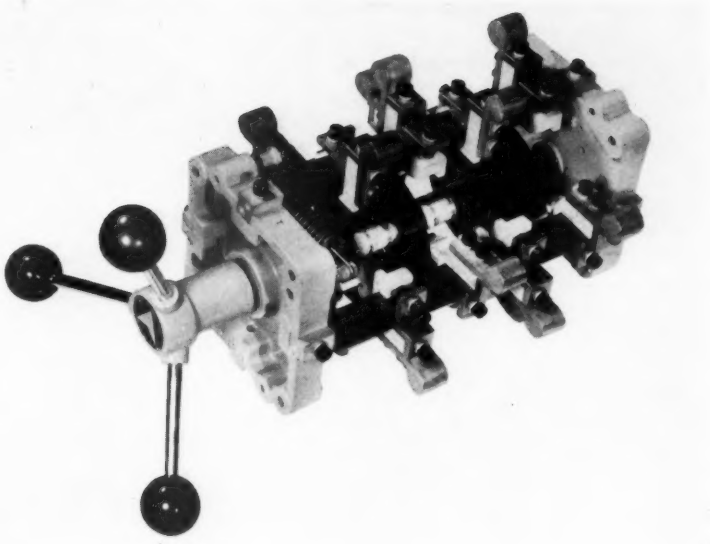
OF possible interest for carriage heating, the A150 switch (shown in the top illustration on this page) is a recent addition to the Austinlite range of multi-circuit switches, now covering from 15 to 150 amps.

The A150 is a slow-make-and-break on-load switch, the design of which is essentially similar to the other Austinlite rotaries. The moving contacts are rollers bridging pairs of fixed contacts, an arrangement which enables the switches to withstand transient overloads without deterioration.

The contact faces are of $\frac{1}{32}$-in. thick silver, open to visual inspection, and can be removed for servicing without dismantling the switch. Contacts are fixed, and can be mounted anywhere on the bar so that creep distances can be increased for high-voltage applications.

For off-load duties, the switch is rated at 300 amps. per moving contact. The switch can be mounted in tandem for use on auxiliary circuits.

Delivery for slow-make-and-break switches is about four weeks and for quick-make-and-break switches, about 20 weeks. Further details can be obtained from the manufacturer, Austinlite Limited, 28, St. James's Square, London, S.W.1.



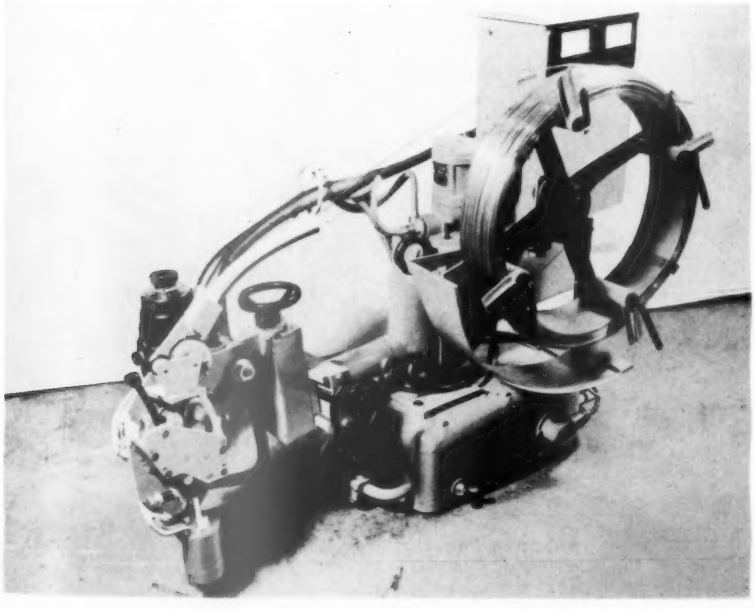
## Bare Wire Welding

A NEW process of $CO_2$ "bare-wire" welding considerably speeds up the mass production of welded parts such as main chassis members, bottled gas cylinders, and car wheels. Welds are protected from hydrogen and nitrogen by an atmosphere of $CO_2$ which costs considerably less than argon.

Basically, the machine consists of a welding head which carries the wire at the appropriate feed rate and surrounds the arc with an atmosphere of $CO_2$. A single control lever engages the wire feed and switches on the carriage motor and arc. Water-cooling is independent of mains supplies.

The process can be used for welding a very wide range of steel grades. It is claimed that welds performed are homogeneous and of deep and even penetration. The arc is self-regulating and stocks of expensive powders are not required. Nitrogen-porosity is virtually eliminated by the low nitrogen and hydrogen content.

Further details of the machine, which is illustrated below, can be obtained from the Industrial Equipment Division of Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.



## Specialised Brazing Service

A SPECIALISED brazing service now is available at the X-Ray Department of the Metropolitan-Vickers Electrical Co. Ltd., where specialised brazing plant is used in the manufacture of X-ray tubes and valves.

The plant produces high-quality brazing in controlled atmospheres and under vacuum. It includes radiation and muffle furnaces with which temperatures up to about 1,800 deg. C. can be achieved, so that no torch or flame is needed; these furnaces will handle parts up to approximately 3½ in. square and up to 10 in. in length. "Eddy current" furnaces give fairly local heating and temperatures in excess of 1,100 deg C. These are suitable for brazing circular components and will deal with items up to 3½ in. in diameter and up to 3 ft. 6 in. in length.

The joints catered for include stainless steel to stainless steel; stainless steel to steel; copper to steel, steel to steel; copper to copper; steel to Nilo K; and Monel to other metals. A method of brazing beryllium also has been developed, and applications for tungsten brazing can be investigated.

Further details may be obtained from Newton Victor Limited, 132-135, Long Acre, London, W.C.2.

## Factory White Paint

PANOLITE is a high-grade flat oil paint formulated to give good results on a wide variety of surfaces. It can be applied to any clean, firm, and dry surface. Poor surfaces require a priming coat of Pandura Primer/Sealer.

Advantages claimed: one-coat obliteration; a smooth-sheen, washable finish; easy application by spray, brush, or roller; freedom from lead with resultant safety and suitability for premises in which food is handled; alkali-resistance, and non-settling properties allowing the paint to be stored indefinitely.

The paint covers 70-80 sq. yd. per gal. Rough or porous surfaces require 60-70 sq. yd. per gal. The primer/sealer covers 50-70 sq. yd. per gal.

The product is made in white and cream and can be tinted to any pastel shade with oil stainers. This service will be carried out during manufacture if a few days are allowed for delivery.

Prices, subject to discount for quantities, are 36s. per gal. and 34s. 6d. per gal. in 5-gal. drums.

Samples and further details can be obtained from the manufacturers, P. & A. New Ltd., Ditchford Mill, Wellingborough, Northants.

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## Four-Speed Unit Head

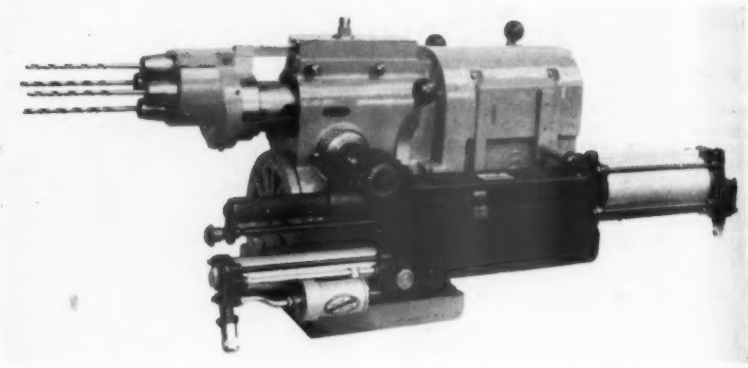
A SELF-CONTAINED motorised unit is available having a flanged base allowing mounting horizontally, vertically, or otherwise as may be required.

The head has four spindle speeds and hand feed. Length of stroke is 4½ in. Other models provide eight or more spindle speeds over a wide range.

The head can be supplied with manually-started geared power feed mechanism giving four rates of feed from 0·0035 in. to 0·008 in. for each revolution of the spindle.

The illustration shows a four-speed head fitted with a manual starting hydraulic-pneumatic control unit with adjustable settings to allow rapid approach, rate of required feed, and final rapid withdrawal of the cutting tool. Fixed-centre multi-spindle drilling attachments are available for use with the heads.

Further details can be obtained from the manufacturer, Grimston Electric Tools Limited, Progress Way, Purley Way, Croydon, Surrey.



## Peripheral and Radius Dressing

OF interest in connection with crankshafts, the Endia Model PRD 650 is a new device for dressing the periphery of wheel and corner radii with a single natural diamond.

The device consists of a patented arrangement of pivots and links for transferring rotary motion from three base pivot points to cause the diamond to rotate round a theoretical pivot.

The diamond is held and locked centrally during dressing and selectively released to move through a controlled 90 deg. of arc at either side of the wheel.

By positioning the shorter selector handle, all pivots are prevented from rotation and cannot accidentally be moved during the first dressing stage.

For dressing radii, the selector is moved through 90 deg. to the left or right, freeing the pivots for rotation and permitting a radial movement of 90 deg. positively limited by fixed stops. It is impossible to "dig" into the previously-dressed periphery or into the side of the wheel.

Positioning of the single diamond to produce a particular form merely involves the adjustment of the diamond tip from the front face of the carrying member. For short run work, slip gauges can be used. Diamond wear is corrected by advancing the stone according to the gauge.

The fixture is designed for the dressing of radii of up to 0·5 in. There is no limit on the wheel width or diameter.

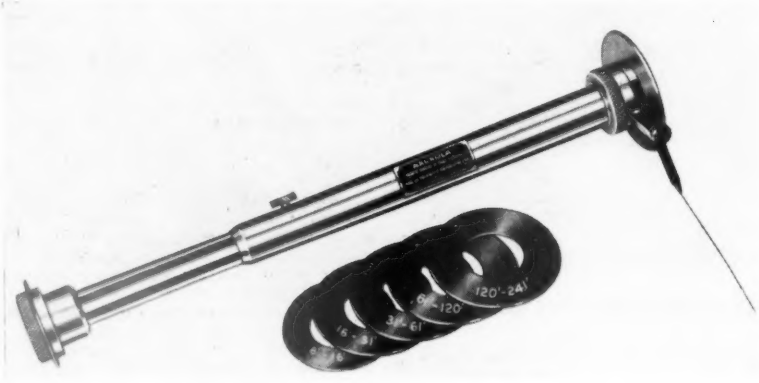
The illustration shows the fixture mounted in a special base. Bars extending from this give the same overall length and end diameters as the crankshaft so that the whole unit is interchangeable with the component. The bars can bear a flange with location holes or faces or can be fitted with a spirit level to ensure correct alignment with the wheel in relation to the throw of the crankshaft.

The assembly can be used on the grinding machine or the basic fixture can be mounted on a support or base attached to the work-table.

Finished radii are suitable for the fillet rolling process.

Initial cost of the complete assembly is much lower than that of profile-copying devices. There is a saving in diamond cost and dressing time. The equipment can be moved without adjustment or dismantling, and easily can be adapted to suit other crankshafts.

Further details can be obtained from the manufacturer, Engineering Diamonds Limited, 26, Warwick Row, Coventry.



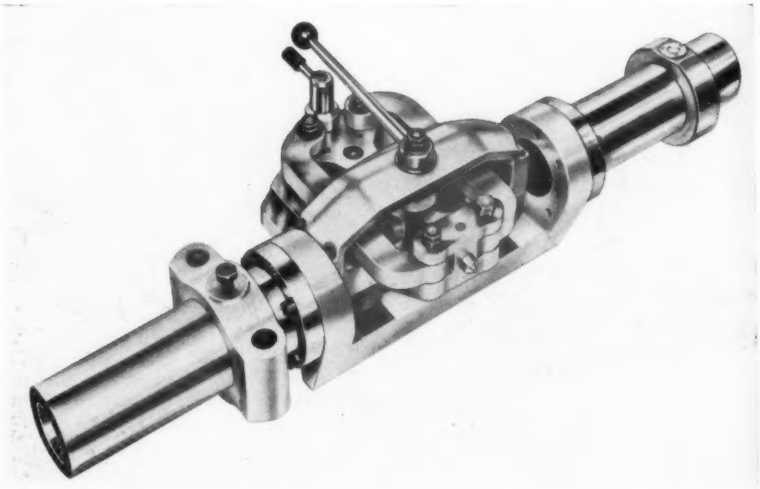

## Draughting Instrument

THE Arcrola is a scientifically-developed draughting instrument which will calculate and produce accurate arcs of extensive radii from 4 ft. to 240 ft. in a matter of seconds.

Method of operation is as follows: assuming that an arc with a radius of 221 ft. 4 in. is to be drawn, the draughtsman fits the master disc marked 120'-241' to one end of the instrument. He then draws out the telescopic scale to the graduation marked 221' 4" and locks further movement with a finger screw. Placing the two discs on the radius line and positioning the weight-loaded pencil, the draughtsman then rolls the instrument gently forward producing an arc or, if required, a complete circle.

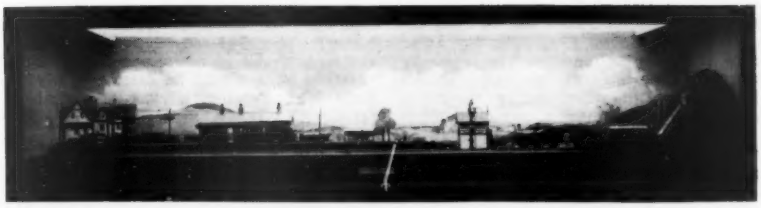
The instrument can be used on any reasonable surface, is precisely made with ball-bearing pencil holder and is equipped with set of five master discs in instrument case with instructions. Length when fully extended is 29 in. Weight is 1¾ lb. Price is £22.

Further details can be obtained from the manufacturer, Triangle Products Limited, Manchester Road, Hyde, Cheshire.



## Railway Bar at Banbury

Likely to be of particular interest to the railway enthusiast, the railway bar of *The Crown Hotel* at Banbury, Oxon, is approached past a display of G.W.R. guard's equipment and welcomes its guests with a variety of "railwayana."



*Illuminated station model built into the wall of the railway bar of the Crown Hotel at Banbury*

*G.W.R. guard's equipment displayed in the entrance to the hotel*

*Part of the bar in the hotel, showing prints and photographs of the G.W.R., and tickets and pages from timetables under the glass table top*

The bar contains an illuminated scenic model of a station, many old prints and photographs of the Great Western Railway, photostats of historic railway announcements, and, displayed between glass tops and tables, other objects of railway interest such as now obsolete tickets and pages from timetables.

The bar itself was decorated and furnished in contemporary style by Mr. J. P. D. Braddell, the Manager, with help from the Public Relations & Publicity Department of the Western Region of British Railways and Mr. J. H. Scholes, Curator (Historical Relics) of the British Transport Commission.

## Antofagasta (Chili) & Bolivia Railway Co. Ltd.

The Bolivian Government last week took over the operation of the lines owned in Bolivia by the Antofagasta (Chili) & Bolivia Railway Co. Ltd., and of those which that company leases from the Bolivia Railway company, a U.S.A. corporation. At a meeting in the Ministry of Foreign Affairs at La Paz, Mr. G. M. Wilson, the General Manager, handed over control to the Bolivian Foreign Minister, Señor Victor Andrade.

Mr. Wilson pointed out that passenger and goods traffic had declined by 45 per cent and the company had been unable to obtain Government approval to raise tariffs and reduce staff by 25 per cent.

Señor Andrade stated that the Government would operate the line for four to six months while a commission studied the economic problems. The future of the undertaking would be decided in discussions with the company during the next three months.

This step is the outcome of the inability of the company to function in unsatisfactory conditions, as recorded last week. For more than a year, the Company has made repeated representations to the Bolivian Government, asking for measures to remedy the situation.

The Managing Director, Mr. R. H. Dobson, accompanied by the Assistant Secretary, Mr. F. R. Hancock, is on a two-month visit to Bolivia in an endeavour to arrive at a solution.

## Staff and Labour Matters

### Engineering Workers' Pay Demands

More than half the total membership of the Amalgamated Engineering Union has given support to a demand for a substantial increase in pay for engineering workers.

The divisional committees of the union covering North London and Manchester are asking for an extra 30s. weekly; other resolutions cover demands ranging from 10 per cent to 15 per cent increases. The claims will be considered by the Annual Conference of the Amalgamated Engineering Union's policy-making National Committee to be held at the end of April.

### South Wales Railwaymen's Charter

The South Wales & Monmouth District Council of the National Union of Railwaymen has passed a resolution requesting a railwaymen's charter to be drawn up to take into account developments under the modernisation programme with its greater productivity and new work methods.

The charter would make provision for a 40-hr. week, three weeks' holiday with pay, and adequate retirement pension. There will be provision for greater training facilities to equip displaced men for employment in another grade, monetary compensation to staff who could not be found employment in the railway industry as a result of redundancy.

Other resolutions passed by the District Council included support for the South Wales miners in their efforts to stop the closure of collieries and an immediate demand for a substantial increase in wages for railwaymen.

## Parliamentary Notes

### Various Railway Problems

Other railway problems were raised in the Second Reading debate on the Transport Commission Bill in the House of Commons on February 17, than that of taxi-cab ranks, which had been made the occasion for formally moving rejection of the Bill (and finally withdrawing it).

Mr. W. Deedes (Ashford—C.) said the Bill enshrined some very urgent matters. There were within its provisions which must go through if—"thinking of his own part of the country"—the quarter of a million people who were looking forward to an improved, modernised, electrified system in South-Eastern England, were to be given the means of travelling to and from their work.

"With luck," he added, "we shall have 75 miles of line in Kent electrified by June, and the whole job finished by June, 1962. There will then be 325 miles of

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line modernised at a cost of £45 million."

Mr. Percy Morris (Swansea W.—Lab.) said there was an understandable public clamour for punctuality and greater efficiency. Both were highly desirable, but they would not be achieved until many of the reconstruction schemes were brought to completion. The employees of British Railways had a number of legitimate grievances, but they were not using them as a level to hold up modernisation. British Railways superannuitants had special grounds for resentment owing to the grossly inadequate pensions and the refusal of the B.T.C. to come to their aid. The cost would be infinitesimal compared with the expenditure envisaged in this Bill, but these people did not ask him and other Members to be obstructive about the Bill.

Mr. Joseph Grimond (Orkney and Shetland—Lib.) said that the main gateway to Orkney and Shetland was by air from Aberdeen. In winter the bus for the only aeroplane to Orkney and Shetland each day leaves at 8.15 in the morning. The train from the South varied at week-ends, but it got in at about 7.30 a.m. Unfortunately that train was often late and, therefore, travellers missed the plane, whereupon they were compelled to spend the night in Aberdeen. This matter affected not only the British Transport Commission, but the B.E.A.

"Unfortunately," Mr. Grimond added, "I find that there is such cut-throat competition between these nationalised industries that to get them to alter their schedules to fit in one with the other is like an irresistible force against a resistible block. Somehow, we have got to extend the time at Aberdeen unless the trains can be made a great deal more punctual. I have had this matter taken up with Sir Brian Robertson, and I have had a most courteous reply from him. He has been most helpful, and has arranged for information to be sent forward when trains are late. But I hope that when, next winter, schedules are reconsidered, this difficulty may be looked into.

"Secondly, and, I believe rightly, the Transport Commission now insists that unless one gives up a sleeper 24 hr. before it is required one has to pay for it. I have no objection to that in general. But many people who come from the North find that the plane does not fly and are, therefore, put to extra expense through no fault of their own. It is a small point, but it happens continually, and if the point of view of the users is looked at I shall be grateful."

He thought it was the experience of most hon. Members, probably chiefly as a result of the reconstruction programme, that trains were late. The last three trains which he had travelled down from Scotland on had been substantially late. One, in fact, was 2½ hr. late. Very often as soon as one got on a train one was told by the guard or conductor that the train would be late. He agreed that this was largely due to the reconstruction programme which they all wanted to see go forward, but it caused immense difficulty to people who had appointments and connections to catch, and so forth.

On certain occasions, particularly at week-ends, there was a regular re-routeing of trains, because repairs were being carried out on northern lines and it was known before the train started that it would be an hour or two late. This was put up on boards at stations, but so far as he knew it was not published in any other way. He appreciated the difficulties, but would it not be possible, as long as this went on, to publicise the lateness of trains? Would it not be possible for the B.B.C. to make an announcement that the Scottish train would be late, possibly an hour late, because it was re-routed so frequently on Sunday nights.

Mr. E. Popplewell (Newcastle-upon-Tyne E.—Lab.): In certain areas the B.T.C. issue to the local press bulletins for that purpose.

Mr. Grimond: That is a good practice. The hon. Member for Ashford (Mr. W. Deedes) referred to the bulletin of the Southern Region, which is an extremely good step in the same direction.

There appears to me to be a tendency to feel that while reconstruction is going on nothing can be done to old stations until they are pulled down. They are in a terrible state and are very difficult to keep clean. The travelling public may be chiefly to blame here, because they make a fearful mess of them by scrawling all over them. The Transport Commission might, through publicity, say that it will get on with reconstruction and new stations will come, but in the meantime it should do its best to keep up the appearances of the old stations and to wash and clean them if the general public will co-operate.

The scrawls on the walls of a station which I regularly use are such that one is reluctant to let children go into the waiting room. The staff clean them off to some extent, but they are put back. This causes bad public relations. Is it not possible to make general use of publicity and public relations to point out to the public the difficulties under which the railways are still working owing to the importance of getting on with reconstruction and the need, in the meantime, to keep the old equipment and carriages in as good a condition as possible?

Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Ministry of Transport & Civil Aviation, said he would take note of these points of grievance. The point concerning punctuality was one that he had already taken up with the Commission on previous occasions to ask whether it was not possible to re-schedule trains when it was known that there would be interference with the time-table. "I am told," Mr. Nugent added, "that although the Commission does the best it can, there are times when the unexpected happens."

## Questions in Parliament

**Transport of Food from the North**

Mr. Hector Hughes (Aberdeen N.—Lab.) asked the Minister of Agriculture, Fisheries, and Food on February 23, how many complaints he has had from north-east Scotland about delay in the transport to the south of Great Britain of perishable food, the date of the latest complaint, the cause of each delay and the nature of each complaint; and what action he had taken in each case.

Mr. J. B. Godber, Parliamentary Secretary, in a written answer: My Rt. Hon. Friend can find no record of any complaints about delays in the transport of perishable food from north-east Scotland.

## Contracts and Tenders

*B.T.C. contracts for diesel-electric locomotives*

The British Transport Commission has ordered 226 main-line diesel-electric locomotives for British Railways. The total value is some £16,250,000. Details of the contract are as follow:—

English Electric Co. Ltd.: 42 Type "3," 1,750-h.p., main-line diesel-electric locomotives, 30 for the Eastern Region and 12 for the North Eastern Region, and 30, Type "1," 1,000-h.p., main-line diesel-electric locomotives, 7 for the Scottish, 10 for the London Midland, and 13 for the Eastern Region

British Thomson-Houston Co. Ltd.: 17, Type "1," 800-h.p., main-line diesel-electric locomotives, for the Eastern Region

Crompton Parkinson Limited: 137, diesel-electric power equipments for Type "4" locomotives to be erected in British Railways' workshops, for the London Midland Region.

The Danish State Railways has placed an order with Nydqvist & Holm Aktiebolaget, Trollhättan, Sweden, for 45 standard-gauge diesel-electric locomotives. The order will be financed by a $20,000,000 loan recently granted by the World Bank to the Danish State Railways. Delivery will commence in 1960 and will be completed in 1962.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

*From South Africa:*

12 items of automatic couplers and spares.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. K.7626: for automatic couplers and spares" should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is March 6, 1959. Local representation is essential. The Board of Trade reference is ESB/3364/59.

*From India:*

11 items of steel plates including smokebox front plates, firebox tube plates, smokebox tube plates, and flanged firebox throat plates.

The issuing authority is the Director General of Supplies & Disposals. The tender No. is P/SR-7/19564-H/IV(A). Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is March 6, 1959. Local representation is essential. The Board of Trade reference is ESB/4098/59.

*From Sudan:*

2,000 standard tyres for carriage and wagon wheels.

The issuing authority is the Controller of Stores, Sudan Railways, Atbara. The tender No. is 1902. Tenders should be addressed to the Office of the Controller of Stores, Atbara. The closing date is March 26, 1959. The Board of Trade reference is ESB/4268/59.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from

the Branch (Lacon House, Theobalds Road, W.C.1).

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the closing date of the call for tenders from South Africa for bogie ballast wagons, recorded in our January 2 issue, has been postponed to March 20, 1959.

## Notes and News

**Heavy Demand for L.M. Region Camping Coaches.**—The camping coaches at the 16 locations on British Railways, London Midland Region, are fully booked for the whole of August, and demand for bookings at other periods is reported to be heavier than in previous years.

**Treborth Station to Close.**—Treborth Station, between Bangor and Caernarvon in the London Midland Region of British Railways, is to be closed from March 2. Passengers can book to Menai Bridge Station and proceed thence by bus. Parcels and passenger train merchandise and freight traffic will be dealt with at Bangor.

**British Railways Amateur Boxing Championships.**—The finals of the 1959 British Railways amateur boxing championships will take place at the Royal Albert Hall, London, on April 30. Field Marshal Lord Montgomery has accepted an invitation from Sir Brian Robertson, Chairman of the British Transport Commission, to attend and present some of the awards.

**Railway Benevolent Institution.**—At a meeting on February 16 the Board of the Railway Benevolent Institution granted annuities to six widows and three members involving an additional liability of £214 a year; 93 gratuities were also granted amounting to £907 to meet cases of immediate necessity. Grants made from the Casualty Fund during January amounted to £1,704.

**Ponders End Lock Opened.**—Sir Reginald Kerr, General Manager of British Waterways, opened the new wide lock at Ponders End, on the Lee Navigation, on February 18. This marks the completion of the first major project in the £864,000 scheme to improve the waterway. The effect of the new Ponders End Lock will be to open up the whole heavily industrial section of the Lee between the Thames and Enfield, a distance of 13½ miles, to the largest craft used by the carriers. The lock, built to a width of 18 ft. 6in. alongside an existing lock only 16 ft. 6 in. wide, will permit the 135-ton Lee barges to pass for the first time to the Brimsdown area of Enfield.

**"Freedom of Scotland" Rail Ticket.**—The "Freedom of Scotland" ticket introduced last year by British Railways, Scottish Region, will be available again this year from March 1 to October 31. The scope of the ticket has been extended to include Carlisle and Berwick, but the cost, £9 first class and £6 second class, remains the same. The holder is entitled to seven days' unlimited travel. For members of the same family travelling together the second class fare is reduced to £5. The minimum requirement for this reduced charge is one adult and one child. Similarly the first class fare is reduced from £9 to £7 10s. Children 3 years and under 14 years are charged half the adult rate. The holder is free to travel anywhere in Scotland where there is a railway service and on all the steamer services of the Caledonian Steam Packet Company.

**Alfred Herbert Limited Dividend.**—By paying a final dividend of 4 per cent, tax free, Alfred Herbert Limited, machine tool makers, bring the total ordinary dividend up to 6 per cent on doubled capital, so effectively maintaining it at the previous year's rate. Trading profits amounted to £2,251,984 (£3,666,922), and net profits were £1,417,975 (£1,821,311).

**Institute of Traffic Administration: Annual Conference.**—The 1959 Conference of the Institute of Traffic Administration will be held at the Royal Hotel, Southampton, from May 29 to 31. Lord Merrivale, President of the Institute, will preside, and the principal speaker will be Mr. A. C. West, Chief Constable to the British Transport Commission. The annual dinner of the Institute will be held on May 30.

**Railway Students' Association: Golden Jubilee Celebration, 1959.**—The Railway Students' Association golden jubilee dinner and dance will be held at the Chatham Rooms, Victoria, on Monday evening, April 6, and not on Saturday evening, as stated in our issue last week.

**Sir Brian Robertson Inspects London Suburban Peak Traffic.**—The Chairman of the British Transport Commission, Sir Brian Robertson, on February 23 inspected Cannon Street and London Bridge Stations, British Railways, Southern Region, during the evening traffic peak. He travelled by the 5.23 p.m. electric train from Cannon Street to London Bridge, and found empty seats at the front of the train. The accompanying illustration shows, at London Bridge (left to right): Mr. C. P. Hopkins, General Manager, Southern Region; Mr. S. T. Stanbridge, Stationmaster; Mr. T. R. V. Bolland, Traffic Superintendent, South-Eastern Division, Southern Region; Sir Brian Robertson; and Sir Leonard Sinclair, Member, British Transport Commission.

**Level Crossing Accidents in U.S.A.**—The "Wabash Cannon Ball," running between Detroit and St. Louis on the Wabash Railroad, was involved in two level-crossing accidents at Mount Olive, Illinois, last Saturday, in which five people were killed.

**New Power Plant for Derby Works of British Railways.**—To meet increasing electrical-power demands from its Locomotive and Carriage & Wagon Works at Derby, and as part of the modernisation programme, British Railways, London Midland Region, has begun a major reorganisation of the power supplies. Two new turbo-alternator sets and new boiler plant will be installed at each works to replace existing equipment which is inadequate for the present load. The alterations will largely be completed early in 1960.

**Withdrawal of Western Region Train Services.**—The passenger train service between Newton Abbot and Moretonhampstead is to be withdrawn by British Railways Western Region on and from March 2, and passenger trains will cease to serve the seven stations on this 12-mile branch including Heathfield and Bovey Tracey. At present there are seven trains in each direction on weekdays; there is no service on Sundays. Alternative road services operate in the area. Also on and from March 2, the passenger train service between Newton Abbot and Plymouth will be reduced by the withdrawal of

*Sir Brian Robertson with Sir Leonard Sinclair and officers of the Southern Region during an inspection of evening peak-hour traffic at London Bridge*

local stopping services, and trains will cease to call at Wrangaton, Bittaford Platform, Ivybridge, Cornwood, and Plympton. A frequent service of omnibuses operates from Plymouth bus station to the area served by the stations to be closed.

**Tecalemit Limited Acquire Half of British Filters Limited Shares.**—Tecalemit Limited, automotive and industrial lubrication engineers, recently purchased half of the ordinary shares in British Filters Limited of Maidenhead.

**D. Napier & Son Ltd. Results.**—Group profit of D. Napier & Son Ltd. for the year ended December 27, 1958, amounted to £754,449 (£846,381). After charging depreciation of £511,906 (£585,054) and taxation of £148,000 (£170,000), the net profit was £94,543 (£91,327). A total ordinary dividend of 7½ per cent has been recommended.

**A. A. Jones & Shipman Limited Agency for Diamond Hones.**—By an agreement with Diagrit Limited, manufacturers of diamond tools, A. A. Jones & Shipman Limited, Leicester, is now able to offer a comprehensive service on diamond honing. The company is the sole selling agent throughout the world for these diamond hones, which will be marketed under the registered trade mark Diamold.

**Mechanical Handling Exhibition in 1960.**—The next Mechanical Handling Exhibition and Materials Handling Convention will be held at Earls Court, London, on May 3-13, 1960. The scope of the last exhibition, in May, 1958, was widened to include international exhibits. Particulars can be obtained from the Organiser, Mr. H. A. Collman, Mechanical Handling Exhibition, Dorset House, Stamford Street, London, S.E.1.

**New Goods Offices at Yarmouth Vauxhall Station.**—A two-storey goods office has recently been completed adjacent to Yarmouth Vauxhall Station, British Railways, Eastern Region. The building contains a public enquiry office, offices for the Goods Agent and his clerical staff, and a messroom and locker room for the men working in the goods yard. Because the building is adjacent to the River Bure, it is constructed on piled foundations and the ground floor has been raised above flood level. The floors are of flat slab construction supported on reinforced concrete columns. The external cladding is a combination of heather-brown brickwork and prefabricated curtain walling. The building was designed by Mr. H. H. Powell, Regional Architect, under the general direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region.

**British Oxygen Co. Ltd. Results.**—Group trading profits of the British Oxygen Co. Ltd. for the year ended September 30, 1958, were £7,224,500 (£5,964,085). The net profit after tax was £2,876,208 (£2,440,245). A final dividend of 6 per cent has been recommended, making a total of 10 per cent for the year.

**English Electric Co. Ltd. Results.**—Group profit of the English Electric Co. Ltd. for the year ended December 27, 1958, was £7,017,638 (£6,961,578). After allowing for all charges, including taxation and transfer to reserve, the group net profit was £3,017,258 (£2,951,285). A final dividend of 10 per cent has been recommended making 14 per cent for the year. A capitalisation issue of ordinary shares is to be made on a one-for-two basis.

**D. Napier & Son (Canada) Ltd.**—A Canadian subsidiary, D. Napier & Son (Canada) Ltd., has been formed by D. Napier & Son Ltd., to conduct sales and service of Deltic diesel engines and other Napier products. The head office is at 4104 St. Catherine Street West, Montreal. The Directors are: Mr. H. Sammons (Managing Director of D. Napier & Son Ltd), President; Mr. L. A. Sanson (formerly Napier's Senior Representative in Canada), Executive Vice-President; Mr. S. M. Finlayson (President, Canadian Marconi Company); Mr. J. C. K. Shipp (Vice-President, Napier Engines Inc., U.S.A.); Mr. H. B. Style (President, John Inglis Co. Ltd., Toronto).

**Possible Closure of Hurst Nelson & Co. Ltd.**—The management of Hurst Nelson & Co. Ltd., of Motherwell, wagon builders, has announced that it might have no alternative but to close its works and pay off all employees when present orders are completed. In that event more than 300 workers will be affected in a district where unemployment is already running at 9.4 per cent of the insured population. Mr. Charles Bailey, Managing Director of Charles Roberts & Co. Ltd., of Wakefield, which took over Hurst Nelson last year, has stated: "We regret that conditions in the railway wagon building industry have deteriorated very quickly and we have no inquiries of any magnitude outstanding for railway wagons at present."

**Macclesfield Hibel Road Railcar Depot.**—Provision of permanent outstabling facilities for three-car multiple unit diesel trains used on local services has been begun by British Railways, London Midland Region. The work involves the realignment of two sidings and the extension of a third to provide outstanding accommodation.

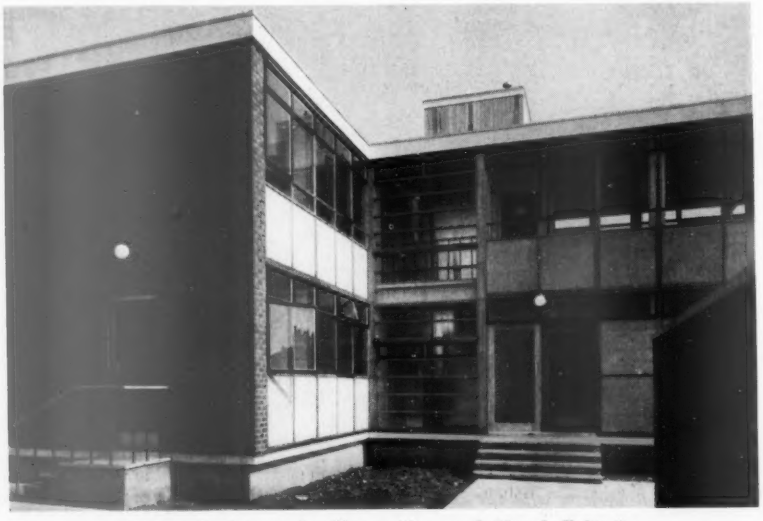
**The Consolidated Signal Co. Ltd.**—A net profit of £45,387 for the year ended September, 1958, is shown in the published accounts of the Consolidated Signal Co. Ltd. This compares with £45,213 for the previous year. Dividends recommended are 6 per cent on the cumulative preference and 40 per cent on the ordinary stock.

**Victorian Railways "Harris" Trains.**—In our January 30 issue, on page 118, it was stated in error that the motor coaches for the first order of 30 "Harris" trains were supplied to the Victorian Railways by Metropolitan-Vickers Electrical Co. Ltd. The vehicles were supplied by the Gloucester Railway Carriage & Wagon Co. Ltd., with electrical equipment by the English Electric Co. Ltd.

**Westinghouse Brake & Signal Co. Ltd.**—In his review of the year to September, 1957, Captain A. R. S. Nutting, Chairman of the Westinghouse Brake & Signal Co. Ltd., stated that home and export orders in the Signal & Colliery Division were a record. The year's results for the Brake Division had been affected by a substantial slowing down in the rate of production because deliveries of large contracts had been spread over longer periods than expected. Group profit is £2,035,101, or £108,365 less than the previous year's figure. A dividend of 10 per cent is recommended, as for the previous year.

**Closure of Hawes-Garsdale Branch.**—Because of the financial loss which is being incurred, British Railways, North Eastern Region, is to withdraw passenger and freight facilities and close the line between Hawes and Garsdale Junction from March 16. The measure has the approval of the Central Transport Consultative Committee and the Transport Users' Consultative Committee for the North Eastern Area. Hawes Station will be closed to passengers but passenger facilities will be retained at Garsdale, on the Skipton-Carlisle line. Parcels and freight traffic will continue to be dealt with at both Hawes and Garsdale Stations. Bus services operate in the area.

**Eastern Region Courses in Electronic Accountancy Methods.**—Railway staff at Peterborough, British Railways, Eastern Region, are being trained in the elements of office mechanisation. It is also intended to give those in the clerical side of the industry an opportunity of learning something of the basic principles of the modern techniques employed. The scheme has been launched by the Regional Accountant and, if the experiment is a success, will become a regular feature. One hundred students, from various railway offices,



*Eastern Region goods office at Yarmouth Vauxhall Station*

are now attending a seven-week season of evening study which is being held in the Machine Accounting Centre, Cowgate, Peterborough, and four special sessions are in progress. Each class is limited to 25 students. The lectures are being given by the officer in charge of the Machine Accounting Centre. An examination will be held at the end of each session, and certificates will be awarded to successful students.

**Vickers Limited Final Dividends.**—The board of Vickers Limited has declared final dividends as follow: 2½ per cent actual on the preferred 5 per cent and 2½ per cent actual on the 5 per cent preference stock, less tax in both cases. A dividend of £2 3s. 9d. net per £100 stock is to be paid on the cumulative preference stock.

**Cheaper Motorcar Rates to Northern Ireland.**—Passengers travelling with their motorcars to Northern Ireland by British Railways vessels during May are to be offered reductions of up to £5 in return rates via Heysham. Cars must be accompanied by two passengers. A similar concession will apply to the routes via Stranraer/Larne and Liverpool/Belfast. In our February 13 issue it was recorded that British Railways had already reduced the rates for passages during May to and from the Republic of Ireland via Fishguard or Holyhead.

**British Standard for Engineers' Cold Chisels.**—Safety is a dominant object of the new British Standard publication, B.S. 3066: 1959 for engineers' cold chisels, which is influenced by reports of the Royal Society for the Prevention of Accidents. It specifies well-defined hardness requirements and marks to show the type of steel from which each tool is made. The 19-pp. publication deals with dimensions, quality, finish and testing of flat, crosscut, round-nose and diamond-point chisels in oil and water-hardening carbon steels and in alloy steel. Copies of this Standard, price 5s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

**Temporary Closing of Glasgow Central Station.**—Glasgow Central Station, British Railways, Scottish Region, will be closed on nine successive Sundays from March 8. This is necessary for the installation of colour-light signals. From March 8 to May 3, 1959, inclusive, Sunday train services normally using Glasgow Central Station will start from or arrive at St. Enoch or Buchanan Street Stations. The work to be carried out at Glasgow Central Station is preparatory to the major resignalling scheme which is at present being carried out as part of the Glasgow Suburban electrification project. Steel structures are to be erected to carry the signals and overhead line equipment; signalling cables are also to be installed. At the same time, certain alterations to the permanent way will be carried out to coincide with the requirements of the signalling scheme.

**Steel & Co. Ltd. Bid for R. H. Neal & Co. Ltd. Stock.**—Steel & Co. Ltd., Sunderland, has made an offer to buy the whole of the ordinary stock of R. H. Neal & Co. Ltd. of Ealing and Grantham, makers of the Neal mobile crane. The same company also reports the purchase of the crane business of F. Taylor & Sons (Manchester) Ltd., makers of the Taylor Jumbo mobile crane. As Steel & Co. Ltd. already owns the whole share capital of Steels Engineering Products Limited, manufacturer of the Coles mobile crane, it will control three of the largest British manufacturers of mobile and rail cranes. The three manufacturing companies will continue to produce their individual models in their own factories and will trade as entirely separate entities competitively in Great Britain. In foreign markets, the resources of the three factories will be pooled for securing the greatest possible share of available world business.

**Leyland Motors Limited.**—The report for the year ended September 30, 1958, of Leyland Motors Limited shows a profit of £2,045,745.

**Railwayman Awarded Damages for Loss of Legs.**—Lord Parker, the Lord Chief Justice, in the High Court last week awarded £9,525 damages and costs to a railway worker who had both legs amputated below the knee after being hit by a freight train. The man, Italian-born Francesco Cavanna, was employed as a length man by British Transport Commission when the accident occurred in 1956. Lord Parker stated that Cavanna was oiling points at Dalston Junction where he had to bend down and concentrate on his job, and could not see approaching trains. Lord Parker found the British Transport Commission guilty of negligence. He granted a stay of execution for 21 days pending consideration of an appeal on condition that £525 was paid to Cavanna as soon as possible.

**Electrically-Operated Train Departure Indicators at Fenchurch Street Station.**—British Railways, Eastern Region, has brought into use new types of indicators at Southend Victoria, Shenfield, and Fenchurch Street Stations. Previously there were no departure indicators in the main booking hall and in the Crosswall entrance to Fenchurch Street Station. Electrically-operated "slave" indicators have been installed at both places showing departures from all platforms. The train departure information is displayed on these indicators at the same time as it is shown on "next train" indicators sited near the ticket barrier on each of the four platforms. The indicator equipment has been supplied by Siemens Edison Swan Limited, and the battery and associated charging plant by the Signal Engineer, Eastern Region.

**B.I.C.C. at the Electrical Engineers' Exhibition.**—British Insulated Callender's Cables Limited will be exhibiting on stand No. F9 at the Electrical Engineers' Exhibition at Earls Court, London, from March 17 to 21, 1959. Paper insulated cables for transmission and distribution of electrical power, including low, medium, and high voltage cables will be shown and a special feature will be made of new 33-kV. mass-impregnated non-draining cable and the 11-kV. polythene-insulated P.V.C. sheated aerial power cable. Rubber cables and flexibles will include high-voltage rubber insulated power cables, unarmoured and armoured to home and overseas specifications; railway cables, particularly pantograph cable and terminations; rubber moulded connectors; rubber mining cables; wiring type cables, and accessories. The stand will also show products of the B.I.C.C. Heating Division. Models will be on display featuring alternative low temperature radiant warming systems which are suitable for off-peak operation.

## Forthcoming Meetings

March 3 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Development in overhead electrification of railways as it affects the civil engineer," by Mr. R. E. Sadler.

March 3 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, Cardiff Section, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "An Englishman's view of the railways of the U.S.S.R.," illustrated, by Mr. R. W. Ibbotson, Assistant (Operating), Western Region, Paddington.

March 3 (*Tue.*).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "Effects on the track to be expected from the general introduction of diesels and electrics," by Mr. J. C. Roach, Superintendent of Vehicle & Track Division, B.T.C. Research Department, Derby.

March 3 (*Tue.*).—Railway Correspondence & Travel Society, Sheffield Branch, at Livesey Clegg House, Union Street, Sheffield, at 7.30 p.m. Paper on "Present-day running on the Midland main line," by Mr. D. Plumb.

March 4 (*Wed.*).—Railway Discussion Group, at Peterborough Technical College, Eastfield Road, at 6.45 p.m. Paper on "Timber and timber research," by Mr. Bernard Jay, Timber Development Association Limited, London.

March 5 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "I. K. Brunel—The man and his work," illustrated, by Sir Allan Quartermaine.

March 6 (*Fri.*).—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, E.C.4, at 7 p.m. Paper on "Sixty years' development of London Transport," by Mr. Charles E. Lee.

March 7 (*Sat.*).—The Stephenson Locomotive Society, Scottish Area, at 302, Buchanan Street, Glasgow, at 2.30 p.m. Paper on "The part to be played by signalling in the British Railways modernisation plan," by Mr. O. S. Nock.

March 9 (*Mon.*).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "The future of British Railways," by Mr. David Blee.

March 10 (*Tue.*).—Permanent Way Institution, York Section, in the Railway Institute, York, at 6.45 p.m. Paper on "Long welded rail track renewal in the North Eastern Region," by Mr. P. Chalmers.

March 11 (*Wed.*).—Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.1, at 6 p.m. Paper on "The application of ferrite cores to railway signalling systems," by Mr. G. R. Cass and Mr. J. Sagues.

March 11 (*Wed.*).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "This costs money," by Mr. J. Dobson, North Eastern Region.

March 11 (*Wed.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m. Paper on "Modern rolling stock," illustrated by Mr. L. B. Alexander, Metropolitan-Cammell Carriage & Wagon Co. Ltd.

March 11 (*Wed.*).—Railway Discussion Group, Peterborough, at the Technical College, Eastfield Road, at 6.45 p.m. "The archives of the B.B.C.," illustrated by recordings, by Mr. Brian George, British Broadcasting Corporation, London.

March 12 (*Thu.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Co-operation between European railways," by Dr. F. Q. den Hollander.

March 13 (*Fri.*).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m.. Paper on "Some interesting Continental locomotives," by Dr. P. Ransome-Wallis.

March 13 (*Fri.*).—Stephenson Locomotive Society, North Eastern Area, at the Demonstration Theatre, Northern Gas Board Showroom, 30, Grainger Street, Newcastle-on-Tyne, 1, at 7 p.m. Paper on "Narrow gauge railways at home and abroad," by Mr. J. B. Hollingsworth.

March 14 (*Sat.*).—Stephenson Locomotive Society, North Western Area, at the Manchester Geographical Society, St. Mary's Parsonage, Deansgate, Manchester, at 6.15 p.m. Paper on "John Ramsbottom, father of the modern locomotive," by Mr. F. C. Hambleton.

March 14 (*Sat.*).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 6.30 p.m. Paper on "Southern Suburban," by Mr. O. J. Morris.

March 16 (*Mon.*).—Historical Model Railway Society, at the Caxton Hall, Westminster, London, S.W.1, at 7 p.m. Paper on "The Crich Tramway and its associations with the Midland Railways," illustrated, by Mr. A. Ranson Cowlishaw.

March 16 (*Mon.*).—Railway Correspondence & Travel Society, Merseyside Branch, at the Woodside Hotel, Birkenhead, at 7.30 p.m. Paper on "The North Eastern Railway," by Mr. T. Rounthwaite.

March 18 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Annual General Meeting, followed by a paper on "The electrogyro locomotive," by Mr. T. E. Green, Chief Traction Engineer, and Mr. J. K. Gessler, Traction Engineer, National Coal Board.

March 18 (*Wed.*).—Railway Correspondence & Travel Society, West Riding Branch, at the Talbot Hotel, Bradford, at 7.30 p.m. Paper by Viscount Garnock on "Railroad operations on the North American Continent."

March 19 (*Thu.*).—Diesel Engineers' & Users' Association, at the Institute of Marine Engineers, The Memorial Building, 76, Mark Lane, London, E.C.3, at 2.30 p.m. Paper on "Development of the Vee-type engine," by Mr. G. Hopwood.

March 19 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Young men's discussion—"The opportunities afforded youth in the railway service and how they could be enhanced," preceded by the Annual General Meeting.

## Railway Stock Market

Among foreign rails main attention continued to centre on Antofagasta (Chili) & Bolivia. It is believed in the City that the only course open to the company was that adopted, namely to cease operating the Bolivian section of the railway which suffered a loss of £500,000 last year. The ultimate outcome of the present moves is difficult to forecast, but the prevailing City view is that they should help to clarify the position and enable stockholders to assess the outlook. The ordinary stock rallied sharply, but later reacted, and at 13½ compared with 13¾ a week ago, while the preference stock at 27 was half a point lower on balance. The 4 per cent perpetual debentures were quoted at 36½ and the 5 per cent (Bolivia) debentures at 90½. A week ago the latter were 94.

United of Havana second income stock was again 6½ and the consolidated stock 1¼. San Paulo Railway 3s. units continued to be quoted at 2s., while Mexican Central "A" bearer debentures strengthened from 76 to 76½, and in other directions, Brazil Railway bonds have transferred around 5¼.

Canadian Pacifics at $54⅛ were a little higher than a week ago, the 4 per cent preference at 53 was also maintained on balance, as were the 4 per cent debentures at 65¾, and elsewhere, White Pass have remained around $14. Nyasaland Railways shares were again 15s. 6d., but less active, and the 3½ per cent debentures kept at 62½. West of India Portuguese capital stock held its advance to 104, as did the 5 per cent debentures at 90. Barsi Light Railway stock has been dealt in at 23.

North British Locomotive shares eased further to 12s. 4½d. as they were affected by the news of the Treasury loan and the other borrowings necessitated by the higher costs resulting from the change-over from making steam to diesel locomotives. Although the order book is in favourable shape, it is feared in the City that early resumption of dividends on the ordinary shares is unlikely, though the long-term outlook is good.

Beyer Peacock 5s. shares have receded further from 8s. 4½d. to 8s. G. D. Peters remained at 27s. 6d. and Westinghouse Brake were a good feature, having risen since a week ago from 41s. 9d. to 44s. On the other hand, Charles Roberts 5s. shares declined sharply from 9s. 9d. to 9s. following the statement that the Hurst Nelson works may have to close soon. Wagon Repairs 5s. shares were 10s. 6d. compared with 10s. 9d. a week ago, while Gloucester Wagon 10s. shares came back from 18s. 1½d. to 17s. 9d. Enfield Cables shares came into demand again and rose to 20s. 3d., B.I. Cables were 48s. and Johnson & Phillips 24s. 3d. Associated Electrical were 55s. 3d., English Electric 64s. 1½d. and General Electric 32s. 9d. Crompton Parkinson 5s. shares strengthened to 13s. Pressed Steel 5s. shares kept at 24s. 6d.


# OFFICIAL NOTICES

RAILWAY ENGINEER. A.B.C. Coupler & Engineering Co. Ltd. require an ENGINEER with general railway experience to take control of design and development on technical side of components of rolling stock, etc. Write particulars of training and experience, approximate salary required, to The Secretary (Confidential), Fallings Park, Wolverhampton.

RAILWAY SURVEYOR-DRAUGHTSMAN required by Railway Siding Constructional Engineers. Applicants must have trained in Railway Draughtsmanship, be able to survey existing trackwork, plot same to working scale and be fully conversant with theodolite and level practice. Men (not over 30 years of age) with knowledge of Railway Standard Specification Layouts preferred, and only those who have specialised in the survey and design of Railway Trackwork in the United Kingdom need apply. Conditions of employment include provision of car, all travelling and general expenses, five-day week on rota system, comprehensive superannuation scheme, etc.—Write in first instance, stating age, experience and salary required, to Sidings Construction Department Manager, Thos. W. Ward Limited, Albion Works, Sheffield, 4.

SALES DEVELOPMENT MANAGER. Applications are invited from science or engineering graduates aged 30 to 40 years for a Senior executive position of unusual breadth and interest in an old-established company with a world-wide selling organisation. After an initial period of training, the successful applicant will be responsible for leadership and management of the Technical Service Department including planning of long-term technical development work, laboratory investigation, supervision of the Training School and the care of day-to-day problems arising in connection with the application of Sprayed "Limpet" Asbestos in railway rolling stock, ships, buildings and other applications at home and abroad in co-operation with the company's sales representatives and distributors. Applicants must have a pleasing personality and the ability to discuss technical problems at top level. A knowledge of modern languages is desirable, preferably through residence abroad. The post is pensionable and is located at the Company's new headquarters, near Bolton. A contribution would be made towards the cost of moving. Please reply giving full particulars of education and experience to the Technical Director, J. W. Roberts Limited, Chorley New Road, Horwich, Lancs.

BRITISH TRANSPORT COMMISSION requires in the Department of the Chief Electrical Engineer at 14 Melbury Terrace, Marylebone, London, N.W.1, (1) SENIOR TECHNICAL ASSISTANT. Salary range £1,200-£1,420. Qualified electrical engineer, with experience of electric rolling stock and ability to assist on the design and development of technical features of electrical equipments for electric locomotives, multiple unit trains and diesel-electric locomotives. (2) SENIOR TECHNICAL ASSISTANT salary range £1,045-£1,150. Qualified electrical engineer, to assist in the specification, design and management of contracts for fixed equipment for railway electrification. (3) TECHNICAL ASSISTANT. Salary range £943-£985. Assist in specification, design and management of contracts for electrical equipment for locomotives and trains. Apprenticeship, or equivalent, essential and electric traction experience desirable. (4) TECHNICAL ASSISTANT. Salary range £943-£985. Development work in application of electronic techniques to the testing of electrification system. Experience in the electronic field, knowledge of computer techniques, Degree or H.N.C. (with endorsement for electronics) desirable. (5) TECHNICAL ASSISTANT. Salary range £833-£903. Assist in specification, design and management of contracts for fixed equipment for railway electrification. Apprenticeship, or equivalent, essential. Superannuation scheme. Certain free travel facilities. Medical examination. Write, quoting post number and stating age, qualifications and experience, to Principal Establishment and Staff Officer, British Transport Commission, 222 Marylebone Road, London, N.W.1, within 14 days. S.A.E. for acknowledgement.

WATER CRANE. 3,000 gallons capacity. Excellent condition. Seen Chipping Sodbury. Apply Eagre Construction Co. Ltd., East Common Lane, Scunthorpe, Lincs. 'Phone 4513.

TASMANIAN TRANSPORT DEPARTMENT, Railway Branch. Tenders addressed to The Secretary for Railways, Box 624D, G.P.O., Hobart, Tasmania, are invited for the supply of: Contract No. 133. Three (3) sets of equipment for Diesel General Service Locomotives consisting of engine, transmission and controls and full set of working drawings for complete Locomotive. Contract No. 134. Three (3) General Service Diesel Locomotives complete in accordance with specification No. 134 and conditions of Contract. Tenders will be received in Hobart up to 4.0 p.m. Friday, 1st May, 1959. Copies of specifications and conditions of Contract are available upon written application to The Office of the Agent General for Tasmania, 457 Strand, London, W.C.2.